THE

SOUTHERN AGRICULTURIST.

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PART I.

ORIGINAL COMMUNICATIONS.

ART. IX.—*On Rotation of Crops, as adapted to the Southern States; by* J. HAMILTON COUPER.

Being a continuation of "An Essay on Rotation of Crops," published in the VIth Vol. of this Journal, page 57.

(Continued from page 8.)

"Hopeton, October 21, 1833.

With these preliminary remarks, I will now proceed to enumerate a few rotations adapted to hammocks, tide and inland-swamps. The first being siliceous, and the two last aluminous, the rotations recommended for them may with slight modifications be extended to others of the same general character.

FIRST ROTATION.—*For Hammocks of good quality, where the climate is adapted to cane.*

The quantity of land planted to the full labourer to be,

3 acres	cotton	or $\frac{6}{13}$ths	of the land	cultivated	} 4 acres or 8-13th of marketable crop.
1 "	cane,	$\frac{2}{13}$	"	"	"
$1\frac{1}{2}$ "	corn,	$\frac{3}{13}$	"	"	} $2\frac{1}{2}$ acres, or 5-13ths of provision crop.
$\frac{1}{2}$ "	potatoes,	$\frac{1}{13}$	"	"	
$\frac{1}{2}$ "	peas & turnips	$\frac{1}{13}$	"	"	

And the succession of plants on the same land will be

1st year *potatoes*, *manured*, $\frac{1}{3}$ roots, and $\frac{2}{3}$ in vines preceded by black peas ploughed in, or cut green for forage.

2d year *cotton*.

3d year *corn*, with a dressing of cotton-seed, and a *secondary crop of cow-peas*, drilled along the sides of the ridges or beds.

4th year *cotton*.

5th year *cane*, *manured* with well rotted manure, spread broad-cast and well buried.

6th year *cotton*.

7th year *corn*, with a dressing of cotton-seed, and an after crop of cow-peas.

8th year, *cotton*.

9th year *black peas*, cut green for forage and followed by *turnips*, *manured*.

10th year *cane*.

11th year *cotton*.

12 year *corn*, with a dressing of cotton-seed, and a mixed crop of *pumkins*.

13th year *cotton*.

This quantity of land may be cultivated by the hoe alone, for as every crop is a cleansing one, with proper attention, the growth of weeds will be very small. By the use of the plough and cultivator, it may, however, be increased to, at least 8 acres, to the full hand: and $\frac{1}{2}$ acre more of cotton, cane, and corn may be added. The succession will then be continued.

14th year *cane*, *manured* as above.

15th year *cotton*.

16th year *corn*, with an after crop of peas as above.

And

$\frac{7}{16}$ths, of the land will be in cotton $\frac{3}{16}$ths, in cane,	10-16ths in marketable crops.
$\frac{4}{16}$ths, in corn, followed by peas & pumkins $\frac{1}{16}$th, in potatoes, $\frac{1}{16}$ths, in black peas, followed by turnips	6-16ths in provision and forage crops.

Under the supposition that the manure made from these crops, will only be sufficient for $\frac{1}{4}$th of the land, it is applied to the four crops which most require it. If a greater quantity can be collected, it should be applied to the corn

crop. No manure is given to the cotton crops, in consequence of its tendency when recently applied, unless well rotted and thoroughly incorporated with the soil, to produce a rank and woody vegetation, or a second growth. To avoid the waste that results from rotting the manure sufficiently to avoid these evils, it should be applied, when slightly decomposed, to some preceding crop.

This rotation fulfils, as nearly as the nature of the crops will permit, the principles established in the previous part of this essay.

1. The most valuable plants, adapted to the soil and climate are introduced.

2. Cotton, potatoes, peas, turnips and pumkins, which have broad-leaves, are alternated with cane and corn, which are narrow-leaved plants. The former recur more frequently, occupying the soil nine years as primary, and a part of six years as secondary crops; while the latter occar only seven times.

3. The fibrous rooted plants, cane and corn, are made to alternate with cotton and peas that are tap-rooted, and potatoes and turnips that are tuberous.

4. The recurrence of the same plants on the same land is removed, as far as the quantity of land to be planted in each will admit.

5. The application of manure is at regular intervals; and is made to the crops most to be benefited by it.

6. The arrangement of the different crops, contributes as much to the economy of labour in planting, cultivating and harvesting them, as is consistent with the character of the plants selected.

7. The soil is kept constantly in a state of production, yielding crops valuable for sale, provisions, forage, or the formation of manure. It is at no time idle; and there is, therefore, no loss of interest on the capital invested in it.

8. A sufficient amount of manure is yielded, to keep the soil in the most productive state, if a stock of animals be kept on the plantation, and the dry vegetable matter of the fields be carefully carted to the pens. The expressed cane, tops and leaves from an acre of cane, yield about 10,000lbs. of dry vegetable matter. An acre of corn, including blades, stocks, shucks and cobs, about 3500lbs.,

when the yield of corn has been 20 bushels;* and the after crop of peas 1000lbs. together 4500lbs. An acre of solid peas, 2000lbs. The potato vines, pumkins and turnips, being eat green, contribute only to the production of fluid manure. The total quantity of dry vegetable matter to be applied to the manuring of 16 acres in crop, will therefore be,

4 acres in corn, at 4500lbs. per acre,		18,000lbs.
1 " in peas and turnips,	-	2,000
3 " in cane, at 10,000lbs.	-	30,000
		50,000lbs.

which, if merely rotted by rain, will yield 100,000lbs of manure; and if rotted by the urine and dung of stock from 150,000lbs. to 200,000lbs.,† or at least 25,000lbs. of manure to each of the four acres proposed to be manured. To this supply of manure must be added from 50 to 70 bushels of cotton-seed from seven acres of cotton to be applied to the four acres of corn; and the peas that are ploughed in, preparatory to the potato crop of vines.

SECOND ROTATION.—*For sandy soils, where the climate is not adapted to cane.*

5 acres of cotton.
2 " corn.
2 " peas, with ½ an acre of sweet potatoes and ½ acre of turnips as secondary crops.
1 " of sweet potatoes, and ½ acre of Irish potatoes.

10 " of land to each full worker, using ploughs and cultivators.

1st year *potatoes*, manured, ⅓ roots, ⅔ in vines, preceded by black peas, cut green or ploughed in.

* Mr. Madison estimates the corn-stalk with its appurtenant offal, at not less than three times the weight of the grain belonging to it.—*Address, Amer. Far.* Vol. i. p. 171. See *Idem.* Vol. iv. p 404, for Dr. Bellenger's estimate.

† 300 stone of dry wheat straw increased by absorption to 719 stone in seven months. Straw if simply rotted by moisture from the heavens, will double its original weight; but when rotted by the urine and dung of turnip-fed stock, every ton will yield four tons of manure.—*Sinclair's Code of Agr.* ch. iii. sec. 4. 5.

2d year *cotton.*
3d year *cow-peas*, sowed broad-cast, and ploughed in early in October.
4th year *cotton.*
5th year *corn*, manured—with cow-peas as a second crop, drilled late in June.
6th year *cotton.*
7th year *black-peas*, followed by *turnips*, about the end of August.
8th year *cotton.*
9th year *corn*, manured—with cow-peas as a second crop, &c.
10th year *cotton.*
11th year, *Irish potatoes*, followed by *black-peas* or *cow-peas*, broad-cast.
12th year *cotton.*
13th year *corn*, manured—with a mixed crop of *pumkins.*
14th year *cotton.*
15th year *cow-peas*, sowed broad-cast and ploughed in early in October.
16th year *cotton.*
17th year *corn*, manured—with a second crop of cow-peas.
18th year *cotton.*
19th year *black-peas*, followed by *slip potatoes* in June.
20th year *cotton.*

This rotation on ten acres of land, gives five acres of marketable, three acres of provision crop, (exclusive of peas, turnips and pumkins) and two acres of a green fallow crop. The land is manured every fourth year; and the manure is applied to the most exhausting crop. Green crops are ploughed in, between those that are manured, so that cotton, the most valuable plant of the series, always follows one that leaves the soil in an enriched state. The land is never idle, and furnishes the means of supporting a large stock of cattle; and of maintaining its own fertility. Less manure is made with this rotation than the preceding one, but less is required, as the plants cultivated are not so exhausting. Should the soil be too poor to support this rotation, a larger number of ameliorating crops should be introduced.

THIRD ROTATION.—*For sandy soils, not adapted to cane.*

Should the existing prejudice in favour of grass-fallows or rest, require their introduction, the following rotation may be adopted.

5 acres of cotton.
2 " corn.
½ acre potatoes.

7½ " in crop.

5 " in rest or grass-fallow.

12½ " of land required for each full labourer.

1st year *cotton.*
2d year *grass-fallow.*
3d year *potatoes*, manure—⅓ roots: ⅔ slips, after black-peas ploughed in.
4th year *cotton.*
5th year *fallow.*
6th year *cotton.*
7th year *fallow.*
8th year *corn*, manured—with second crop of cow-peas.
9th year *cotton.*
10th year *fallow.*
11th year *cotton.*
12th year *fallow.*
13th year *corn*, manured—with second crop of cow-peas.
14th year *cotton.*
15th year *fallow.*
16th year *cotton.*
17th year *fallow.*
18th year *corn*, manured, &c.
19th year *cotton.*
20th year *fallow.*
21st year *cotton.*
22d year *fallow.*
23d year *corn*, manured, &c.
24th year *cotton.*
25th year *fallow.*

If the system of alternate years of rest or fallow be preferred, additional fallows may be interposed between the 3d and 4th, 8th and 9th, 13th and 14th, 18th and 19th, and 23d and 24th years.

In these three rotations, the quantity of land that can be cultivated by the use of the plough and cultivator, is believed to be under stated. Five acres of cotton is assumed as the quantity that may be picked in, to the full worker, and two acres of corn and half an acre of potatoes, as yielding as much provision as is required for plantation use. If more land be cultivated to the hand, it will be desirable to introduce some other marketable plant. Indigo presents itself, under these circumstances, as worthy of attention.

ROTATIONS FOR CLAY LANDS.

Tide Lands adapted to the culture of Cane, Cotton and Rice.

FIRST ROTATION.—*On lands that have been under a system of rotation.*

1st year *rice*, stubble turned under as early after harvest as possible, land half bedded and kept dry during the winter.
2d year *cotton*,
3d year *cane*, manured with well rotted cane-trash and rice-straw.

SECOND ROTATION—*For lands previously in wet culture.*

1st year *cow-peas*, land ploughed or deeply turned up early in the fall, and half bedded—ploughed and harrowed in the spring, and sowed broad-cast with peas, 1½ to 2 bushels per acre.
2d year *cane*, manured with well rotted trash and pea vines ploughed in.
3d year *cotton*, on cane trash listed in.
4th year *rice*.
5th year *cotton*.
6th year *cane*, manured.
7th *rice*, &c.

If it be desirable to increase the quantity of rice, then after the third year, the rotation may be,

4th *Rice.*
5th *Rice.*
6th *Cotton.*
7th *Cane.*
8th *Rice.*
9th *Rice*, &c.

The land should every year, after a rice-crop, be ploughed in ridges, immediately after the harvest, and be kept dry during the winter. And the ridges to be reversed or levelled before planting in the spring. Should the cotton crop, however, indicate that the soil has become cold, a peas crop must be occasionally introduced.

Rotation for Tide Lands not adapted to Cane.

1. First year rice; 2d, cotton; 3d, rice; 4th, cotton, &c. 2½ acres of each to the full worker.

2. First year rice; 2d, rice; 3d, corn and peas; or peas broad-cast; 4th, cotton; 5th, rice; 6th, rice; 7th, corn and peas or peas alone; 8th, cotton, &c.

4 acres of rice; 1 acre of cotton; and 1 acre of corn and peas or peas alone.

Rotations for Tide Lands not adapted to Cane or Cotton.

1st year *rice.*
2d year *rice.*
3d year *rice.*
4th year *cow-peas*, broad-cast and ploughed in.
5th year *rice.*
6th year *rice.*
7th year *rice.*
8th year *cow-peas*, broad-cast, &c.

When the land has become cold and stiff from imperfect drainage, or long continued cultivation in rice, it will be proper to commence the course of rotation with cow-peas, as cotton, cane and corn, are not likely to repay the expense of their cultivation. This plant from its organization, is peculiarly well adapted to follow rice: and the expense of its cultivation is limited to a proper preparation for the reception of the seed. After the crop of peas, cane or cotton, can be cultivated with advantage: and then a regular rotation of those plants may be pursued. The rule to be followed, is to introduce peas after rice whenever

there is a doubt that the land is in a state to produce a remunerating crop of cotton or cane. Whenever cane and cotton cannot be grown, and there is a sufficiency of land to admit of having one-fourth more in cultivation than is required for a full crop of rice; (and true economy requires that there should be)—the land should every fourth year be occupied by peas. A still better rotation would be two years of rice and one of peas. The increased production of rice during the two years, the crop of peas, the diminished labour of cultivation, and the destruction of volunteer rice, will, it is believed, amply repay the labour expended on the peas, and the interest of the capital invested in the land occupied by that ameliorating crop.

Rotation for Clay Land not having a command of water.

If adapted to cane, the 1st rotation for sandy lands may be followed with the following changes:

1st year oats, followed by black peas, ploughed in.
9th year oats or barley, followed by black peas, ploughed in.

If the lands are not adapted to cane, then the 2d rotation for sandy lands may be followed, substituting oats or barley, succeeded by black-peas, for potatoes the 1st year, for peas and turnips, the 7th, and peas and potatoes the 19th.

The above courses of crops are offered rather to excite to inquiry and experiment, than from any belief that they are the best that can be suggested. Every planter must consult the peculiar circumstances of his local position; and arrange his crops to suit them. It would, therefore, be idle to think that any system is equally adapted to every situation. The principles of the convertible husbandry, which it has been a leading object to illustrate and apply, are, however, common to all.

Extraneous sources of manure, as marsh-mud, marsh-grass, forest leaves, &c., have not been adverted to, because they are to be procured comparatively by but few; and the principle has been kept in view, that the fertility of the soil should, under a proper rotation of crops, be maintained from its own productions.

The selection of the plants forming the rotations that have been enumerated, has been made exclusively from those which have been found well adapted to the climate and soils under consideration. Other plants not usually cultivated, but of good promise, might have been named, but from a wish to make this essay as little speculative as possible. It is, however, important to remember that it is at all times desirable to introduce new plants; for every extension that can be given to rotations of crops, without a sacrifice of profits, is an economy of the vegetable food of the soil, facilitates the operations of agriculture, and acts as an insurance against the vicissitudes of markets, and those total failures to which all single crops are liable.

The extention of the cultivation of red clover in Virginia and Maryland, has, by interposing an ameliorating crop, between the exhausting ones of wheat and Indian corn, produced a most beneficial revolution in the farming of those States. The turnip-husbandry effected a change not less remarkable in England and Scotland: and to the introduction of maize, the southern departments of France are indebted for an abundance of food, previously unknown to them.

The amount of sea-island cotton that can be picked in, limits the cultivation of this plant to five acres to the full worker; this quantity of land added to that required for provisions, is, however, much less than can be tended by using the plough and cultivator, and it becomes, therefore, highly important to combine with cotton some other marketable crop. With this view the introduction of sugar-cane has been recommended whenever the climate admits of it; and the cultivation of indigo and hemp may also be suggested as worthy of the attention of the cotton growing portion of the community.

By a reference to the rotations that have been offered for consideration, it will be perceived, that the most important circumstances in which they deviate from the ordinary practices of the community, are in the total or partial abandonment of the system of rest or grass-fallows on high lands, and in the introduction of an alternation of crops in such as are cultivated in rice. With a few reasons in favour of these innovations, this essay will be concluded.

There are few principles in husbandry on which scientific agriculturists are more united in opinion, than in the propriety of substituting continued cultivation for fallows, whether naked or of grass. The vague and false idea, that soils imbibe vegetable food from the atmosphere, has been completely exploded; and it is now well understood that grass-fallows can only benefit the soil, by protecting it by a thin shade from the exhausting influence of the sun; by a change of plants, and by the vegetable matter that they return to it in their decay. These advantages are, however, so dearly purchased by the increased investment of a capital in lands; the useless and even injurious character of a large portion of the volunteer growth; the comparatively small quantity of manure yielded, and the foul state in which the soil is left by them; that it has been proved to be sound in theory and wise in practice, to found a selection of the plants that are to succeed each other, in their peculiar fitness for that purpose; and not to trust to such as may spring up by chance. It has also been found to be consistent with true economy to expend some labour in preparing the soil for their reception, in order to increase the amount of the vegetable matter to be converted into animal food or manure. The absence of fallows is the most distinctive feature in the agriculture of the departments of France, of the Netherlands, of Lombardy, and of Tuscany: and in fact, of all countries whose agriculture has been carried to the greatest perfection. The similarity of the climate of Italy to our own, proves that a southern position does not render the practice inapplicable to us. And if it be not, it is certainly most desirable to adopt a system that will relieve the planter from a treble investment in lands and fences; and that will bring into profitable production, the two-thirds of the arable land now lying idle.

Of the advantages of a rotation of crops in rice-lands, my experience of fifteen years, leaves no doubt in my own mind. It is true, that rice may be grown for very many years in lands having a command of water; but it is not less so that with the *same expenditure of labour* in preparing the land, it produces much less under the continued than the alternate culture.

Rice, with a command of water, derives a large proportion of its nutriment from that element and the surrounding air; and, as the frequent flowings leave a con-

siderable deposit of sediment, it is very probable that the cultivation of this grain tends rather to enrich than to impoverish the land. If nothing more were therefore to be considered, than the absolute state of fertility of the soil, there would be no reason, where the deposit from the water is abundant, for abandoning the continued culture of rice on the same field. There are, however, other circumstances of too much importance to be overlooked in the decision of this question.

The experiments of Brugmans and Macaire, already noticed, prove the advantage of an alternation of culture, independently of the state of fertility of the soil. The progressive cooling of the land, which is the necessary effect of long continued irrigation, constitutes another strong motive for the occasional introduction of some crop, the cultivation of which exposes the soil to the action of the sun and air. The early burning of the stubble after harvest, and deep and frequent ploughing and harrowing during the winter, with late planting in the spring, tend, no doubt, if aided by thorough drainage, materially to diminish the evils of the continued culture of rice: but this system, as it exposes the land to the air and sun during the cold months only, must obviously be less efficacious than a whole year of dry culture. In the earlier part of this essay, the practice founded on the necessity of exposing the soil to the heating and drying influences of the atmosphere; of the rice-planters of Lombardy, of cultivating their lands three years in rice, and then allowing them during two more to grow up in natural grasses, was alluded to.

We are informed by Yvart,* that it is there thought necessary to postpone the sowings of the fields, previously in rice, to the middle of May, in order to leave the soil, that has been chilled by the preceding irrigations, more time to be warmed by the sun, while the new fields are sown as early as April. The same motives he observes, "also occa-'sions, very frequently, the alternation of this crop with 'some others, which profiting by the benefits resulting from 'the rice-culture, reciprocally procures for it the advan-'tage of a better preparation of the soil for its future re-'ception; and this wise rotation appears to us to be as well

* Noveau Cours d'Agriculture.—Art.-Succession de culture.

'founded in theory as it is in practice." He further remarks that "it is constantly observed that all the crops that 'succeed immediately to that of rice are clean, abundant 'and very advantageous."

In Egypt, immediately after the rice is harvested, the land is sowed in a second crop; which is usually clover, lucern or oats; and a rotation embracing dry culture is thus obtained.

The practice pursued in China and many parts of India, of sowing the rice in seed-beds, preparatory to transplanting, when about six inches high, occasions the land to be kept a shorter time inundated. This circumstance, added to the greater heat of the climate, and the fine state of tilth in which the soil is kept, by frequent ploughing, accounts for the fact of the successful cultivation, by these nations, of rice in the same fields during many successive years.

The question presented to rice-planters is not, however, whether this grain can be cultivated for an indefinite time on the same land, by a considerable expenditure of labour, and yet be made to yield a remunerating price; but whether, by an interchange of crops, a greater annual value may not, during any given term of years, be obtained, with the same expenditure of labour, from the same investment of capital. The practice of Italy and Egypt, my own experience and that of other planters, on the Alatamaha river, are so much in accordance with the well established principles of science, that I am compelled to believe that rice presents no exception to a rule which is found to apply to the cultivation of every other plant; and that where partial failures have been experienced in the attempts made to apply the convertible husbandry to our rice-lands, they are to be attributed to an injudicious selection of plants—an imperfect state of drainage—insufficient preparation in pulverising the soil, or to not having allowed sufficient time for the removal of the coldness produced by preceding irrigations.

J. HAMILTON COUPER.

ART. X.—*Remarks on the origin and introduction of Whitney's Saw Gins into the Southern States, with a Notice of some errors in the Life of Eli Whitney, by Professor Olmstead, contained in Silliman's Journal; by* Dr. CHS. W. CAPERS.

"St. Helena, August 19, 1833.

Dear Sir,—Having observed in your journal several communications respecting Mr. Eli Whitney, and the cotton-gin, and also a biographical sketch of the same gentleman in Dr. Silliman's *American Journal of Science and the Arts*, Vol. 21, No. 2, January, 1832, written by Professor Olmstead, and noticing some errors in the last communication, I have thought proper, through the medium of your journal, to render a counter statement. In that communication, we find that Mr. Whitney was dissatisfied with the remunerations he received from the State of South-Carolina, and ever spoke with the greatest bitterness of the injustice which he conceived had been done him by the Southern States. I do not mean, for a moment, to deny the merits of Mr. Whitney, and that the cotton-growing-States are highly indebted to him for his genius and inventive power; but an accusation utterly without foundation, as this is, with regard to this State, ought not to be passed over in silence.

It appears from the communication before mentioned, that Mr. Whitney came to Georgia soon after he took his degree at Yale College, (which took place in the autumn of 1792,) when he resided in the family of Mrs. Greene, the widow of General Greene, at Mulberry Grove, near Savannah. During the winter, a party of gentlemen visited Mrs. Greene, and in the course of conversation upon agricultural subjects, mentioned the difficulty they laboured under of separating the cotton-seed from the cotton. Whitney, who had always been remarkable for a mechanical turn and inventive genius, took particular notice of their remarks, and immediately set about inventing a machine which would overcome this difficulty. In a short time he succeeded—and on the 28th of October, 1793, obtained letters patent securing his invention. Visions of unbounded wealth now floated before his imagination.

The difficulty which had hitherto existed to the introduction of this great staple was overcome, and the extent to which it might be carried, was almost incalculable. There were two methods of disposing of the patent, or rather of making use of it. One was by erecting gins in the different parts of the country and ginning upon toll, one-third part to be given for the ginning, or by selling the patent right either to individuals, companies, or a State. Unfortunately, Mr. Whitney adopted the former plan, deluded by the prospect of suddenly making a vast fortune, he fell into an error which was the cause of all his future troubles. Mr. Whitney and his partner Mr. Miller, were without capital sufficient to pursue this vast scheme, and the consequence was a delay which proved fatal to his interest. It is not mentioned exactly, the time of his return, but it must have been in the winter of 1794. It was not, however, until two years after, that a loan was obtained, sufficient to proceed to any great extent. In the meantime, the planters became impatient. The machine was simple in its construction; some, therefore, erected machines themselves after the form of Mr. Whitney's, and some by a trifling alteration in the teeth, thought to evade the patent. Mr. Whitney commenced prosecuting the infringers of his patent. But Georgia, at that time, was in a most unsettled state. One of her judges sat at the bench with loaded pistols before him, and a defendant rode into court on horse back. The judge very cooly shot the horse, seized the prisoner, and then went on with the trial. To this, we may add, that most of the jurors were themselves the violators of the patent. Under such circumstances what could Mr. Whitney expect but defeat, and accordingly the first suit which was tried in the year 1797, went against him.

In the year 1798, another suit was brought before the court in Savannah, but no judge appeared, and Mr. Whitney was again balked in his efforts to obtain justice. In April, 1799, Mr. Miller writes, "The prospect of making 'any thing by ginning in this State is at an end, surreptitious gins are erected in every part of the country; and 'the jurymen at Augusta have come to an understanding 'among themselves, that they will never give a cause in 'our favour, let the merits of the case be as they may." The Company would now have gladly retraced their

steps. They accordingly offered their patent right for sale, but few persons would purchase a right which they were already using with impunity. Some few, however, purchased but the greater part gave their notes, which upon attempting to collect, so many obstacles were thrown in the way, that but little money was realized from this source.

In the year 1807, Mr. Whitney obtained an important decision in the United States' Court, held in Georgia, Judge Johnson presiding. Professor Olmstead informs us, that the judge decreed that the alterations made by Homes, did not take away the right of Whitney to his patent—that the improvement of Holmes, which was that of the teeth being cut in an iron plate instead of the wires used by Whitney, was a meritorious invention, but did not, as before mentioned, destroy Whitney's patent; but as Holmes had a patent for his plate, Whitney could not use it in his gins. A decree for a perpetual injunction was therefore ordered to be entered. Professor Olmstead goes on to add that "This favourable decision did not put 'a final stop to aggression. At the next session of the 'United States' Court, two other actions were brought, 'and verdicts for damages gained of two thousand dollars 'in one case, and fifteen hundred in the other." Such is the history of Mr. Whitney's gin in Georgia. If he met with troubles and difficulties, he certainly brought it on himself. It is acknowledged that he was treated most unfairly, but his great desire for suddenly accumulating vast wealth, bewildered his judgment; no mode of redress was left for him but to complain, and in this, he indulged most freely.

Let us now take a view of his proceedings in our own State—where these complaints and bitterness of feeling existed, to full as high a degree, as against the State of Georgia, but not, as I think, with equal justice. Soon after Mr. Whitney's return to Georgia, in the year 1794, he erected several gins in this State, upon the same plan (that of ginning upon toll) as he had already done in Georgia, and as might be expected with the same ill fortune. Among other places in this State, one was erected in Beaufort, about the year 1797. But as long-staple cotton was the principal kind cultivated there, it was soon found that Whitney's gin injured the staple, and the gin was soon

abandoned in consequence of no one sending their cotton. This discovery was first made by an old lady of the name of Joyner. At that time it was the custom of families to spin and weave their own cotton cloth. Mrs. Joyner found that the cotton ginned at the machine would not spin as well as it had formerly done when got out by the roller, and her neighbours very soon after were sensible that this was the fact. Thus ended Mr. Whitney's hopes of ginning upon toll in the low country, or even selling his patent-right in that quarter.* In the back part of the State, however, where the green-seed cotton only can only be cultivated, many of his gins were used by the planters. Mr. Whitney accordingly sent an agent, Mr. Russel Goodrich, to that part of the country. In September, 1801, he writes to Mr. Whitney the following letter:—"I have 'spent a part of this summer in South-Carolina, on the busi-'ness of Miller & Whitney. Many of the planters of that 'region, expressed an opinion, that if an application were 'made to the Legislature by the citizens, to purchase the 'right of the patentees for that State, there was no doubt 'that it would be done to the satisfaction of all parties. 'Accordingly they had petitions circulated among the peo-'ple, which appeared to be generally approved of, and 'were very generally signed." Mr. Whitney accordingly presented a petition to the Legislature of this State, in the

* At the time Mr. Whitney introduced his gin into Beaufort, the long-staple cotton was got out by two negroes turning a crank by hand, to which rollers were attached, the negroes being on opposite sides, and each turning in a contrary direction from the other. A third negro fed the gin. This tedious process was some years after, laid aside for the treadle, to which a sword was attached, and this secured by a button upon one of the cross pieces of the wheel. This being found inconvenient and laborious, the present cranks and boxes were soon after invented. These have continued in use clumsy and inconvenient as they are for the last twenty or twenty-five years, and although there have occasionally been some alterations and amendments, as it was supposed at the time for the better, yet in almost every instance, the planters have returned to the simple foot-gin as better adapted to the use of the negroes. During the last winter, a gentleman from Boston came on to Charleston, and exhibited a gin which bids fair to remove many difficulties attached to the common foot-gin now in use. I have seen a model of this gin. It is simple in its construction, and works in the same manner as the present gin, either by the foot or can be attached to a machine. It has an additional small roller which prevents the seeds from passing through the main rollers, and becoming mashed to the great injury of the cotton and additional labour in moting. The gentleman very suddenly returned to Boston, but it is to be hoped that the ensuing winter his gin will be put in proper order for the inspection of the planters, and that it will be found to answer in every respect.

session of 1801, in which he proposed to sell his right to the State for 100,000 dollars. The Legislature agreed to give him 50,000 dollars, which Mr. Whitney accepted. Mr. Whitney does not appear to have been satisfied any more than Capt. Dugald Dalgetty of Drumthwacket, with those halves and quarters.

But let us take a view of the then position of the Legislature of this State, and the wonder will be how they came to take off one-half of Mr. Whitney's demand, but how they came to be so liberal. The majority of the members of the Legislature were from the low country, where, as I have before observed, Whitney's gin was not used, and is not to this day, with the exception of a few kept for the purpose of getting out stained cotton, and then only, when this article is at a reduced price. If we add to this, that there were many of the upper country members not in any wise engaged in the culture of cotton, the majority must have been great of those who took no interest whatever in Mr. Whitney's gin. I have been told by gentlemen, then members of the Legislature, that the above sum was voted in order to prevent endless litigation between Mr. Whitney and the citizens of the State. No one knew this better than the patentee. With what justice, then, had he a right to complain and say, that he had been treated unfairly and ungenerously by the Legislature of this State. It is true, the following year he met with a new obstacle. Another Legislature having convened, composed of many new members, and the money granted being payable one-half in the year 1801, and the other moiety to be paid in 1802, the Legislature of that year passed an Act, annulling that of the previous year, refusing thereby to pay the 25,000 dollars, and what was worse, entering a prosecution against Whitney for the money already paid. They did this upon the ground that Whitney's patent was not genuine; that it was an old invention new vamped up by him. This was a sad blow to Mr. Whitney—of all species of funding, as a wag informs, that of refunding is the worst. So thought Mr. Whitney. To the honour of the State, however, at the ensuing session of the Legislature, the Act passed in 1801 was confirmed, and the 50,000 dollars paid to Mr. Whitney, and his claims against the State on that score forever closed.

If Mr. Whitney was dissatisfied with Georgia and South-Carolina, he appears according to Professor Olmstead, to have been better pleased with North-Carolina. "In December, 1802, he negociated a sale of his patent right with that State. The Legislature laid a tax of 2*s.* 6*d.* upon every saw employed in ginning cotton, to be continued for four years, which sum was to be collected by sheriffs in the same manner as the public taxes." The State of Tennessee, too, about the same time, laid a tax of 37½ cents upon every saw, to be continued for four years.

Such are the facts with regard to Mr. Whitney and his cotton-gin; and I ask any disinterested person what reason had he to complain of any of these States, if we except Georgia, and even there his biographer, and Mr. Whitney himself, acknowledge that he took a wrong method of proceeding from the very commencement. It is a pity that his friends have revived this subject now almost forgotten in the Southern States, and it is to be regretted that they have written upon it without making themselves acquainted with the facts, and from an ex-parte statement. Mr. Whitney was disappointed in missing the sudden road to unbounded wealth, and it was easy for him to make those who were at a distance from the scene of action, and unacquainted with all the particulars, believe with him, what he had persuaded himself into, that he was unjustly treated by those who had been such great gainers by his genius and talents. I am sorry to add, that I have a charge of a still more serious nature against Mr. Whitney, which if true, will go to prove that he retained until his last moments this bitterness of feeling against the cotton-planters of the South.

I am informed, that a short time before his death, he communicated to his friends that he had invented a cotton gin which could clean the seeds from the long-staple cotton as much easier than by the common method of the foot-gin, as his saw-gin was superior to the old method of cleaning the short-staple by hand; but that he had been dealt with so unfairly by the Southern States, that the secret should die with him. In vain his friends pressed him to make this great discovery known. It was never revealed. If I have been misinformed on this point, and I sincerely hope I am, it can easily be dispoved by his friends, but if it is correct, it certainly shews what I have

asserted, that neither time, nor an approaching dissolution, could, for a moment, remove that dislike towards the South which he had imbibed. My own impression is, that Mr. Whitney never succeeded in any such invention. He may have turned his powerful mind to this subject, formed plans, and thought he had succeeded; but no man knew better than he did, that if he was really master of such an invention, that it would produce him incalculable wealth, and having his mind sharpened by experience, he would thereby, be enabled to avoid the rock upon which he had split with regard to his former invention.

I cannot conclude without recommending to all, the perusal of Professor Olmstead's biography, and the remarks accompanying it, by Dr. Silliman. They shew what rarely occurred at the period of Mr. Whitney's career, a powerful genius rising above the difficulties with which it was surrounded, and finally arriving at ease and affluence; but they also shew that a mind so great and comprehensive, could be embittered by one failure, and retain it even to the last.

Your obedient servant.

CHARLES W. CAPERS.

ART. XI.—*On the proper construction and fixing of Water Racks, so as to prevent animals from passing the water gaps; by* THOMAS PARKER.

"Rockey Grove, Abbeville District, July 1, 1832.

Dear Sir,—The upper part of South-Carolina being very hilly, and the rivers, creeks, and small branches, or runs of water, finding their way to the ocean between hills of considerable height and steepness, the natural consequence is, that after every rain the smaller creeks and branches rise so rapidly and so high that no fence built across them can be kept up. From this feature in the face of

the country, another consequence is, that so many small branches or runs of water exist throughout it, that there are few planters or farmers to be found, through some of whose fields these water-courses do not pass. As fences cannot be kept across them, and as it would be not only very laborious to build fences on each side, but destructive to the rail-timber, and prevent much valuable land from being brought into cultivation; the agriculturists of the upper country adopt the plan of building their fences only to the edges of the water-courses, (commonly called water-gaps) at the spot where they enter and pass out of the field, and then close these water-gaps, by hanging racks across them, the rounds of which, whilst they are placed sufficiently near to each other to keep out hogs, yet let the ordinary water and much loose trash pass between them. But from the great and rapid rise of the water after a rain, large logs and dead trees are brought down these water-courses, which but too often sweep away these racks, and often the logs also to which they are hung, and thus, as well as by sometimes lodging under the rack and preventing it from swinging back to its place, or in some other way leave an opening, through which, hogs especially, and sometimes perhaps, other stock get into the fields. This inconvenience, (or rather evil,) from sad experience, I know to be great, for I have no less than six of these water-gaps to combat with, and will soon add two more and it requires the experience of years to enable an upper country planter or farmer, (especially one who has recently become so from having lived the early part of his life in the lower country, the flatness of which exempts them from this perfect pest,) to give to these water-gaps even a tolerable degree of security against hogs.

When I first settled up here, I listened with some surprise to the account of difficulties my kind neighbours told me my water-gaps would give me; but I soon found that these water-gaps were something more than bugbears. I adopted the plan recommended to me of fixing the logs to which the rack were to be suspended as high as I well could, that the drift timber might pass under them, and their raising the racks swung to these logs, pass under under them also, permitting my racks to swing back to their places. Alas! my water-gaps continued for years

to occasion me no little vexation, trouble, and some loss; and at last, and not until within a year or two back, I found I had gone exactly the wrong way to work.

One of the most intelligent and respectable of my neighbours, who to use his own language, "had served an apprenticeship all his life in *trying* to make water-gaps secure against hogs," told me, upon hearing me utter some doleful complaints against the unfaithfulness of my water-gaps; "Instead of fixing your logs or timber to which your racks are hung *high*, you ought to place them as *low* as possible; for by so doing, from the rapid rising of the waters your log will be covered before the creek has risen high enough to float this drift lumber from the place it occupies, which will, therefore, when it reaches your water-gap, pass harmlessly over log and rack; whereas fix your log as high as you may, you can hardly expect to get it out of the reach of high freshes, and even if you could, some one piece or other of the drift timber in passing under your rack, will at times be caught by it, or the vines by which it swings by a limb or prong, which will stop more timber and form a raft whose weight forced on by a rapid current will tear away your rack, secure it as well as you may," &c. &c. We then discussed at length the best mode of preventing hogs from pushing aside the rack sufficiently to get into the field, or from getting under it by raising it, or diving under it, &c. during which conversation I got much useful information, which has enabled me since, much better than formerly, though not altogether yet, to make my water-gaps *tolerably* secure.

As one of the objects of your useful journal is to enable some to avoid "wasting their time and labour in endeavouring to discover what others already know," I will tell you how, after eleven years experience, I have been best able to secure my water-gaps, even at the risk of being thought a very dull fellow from not pursuing my present course from the very start. A rack for a water-gap should be made, the bottom and top pieces of *green* timber, and not too heavy, the rounds of *seasoned* heart-oak timber, if to be had. To make a water-rack, (the common phrase) procure a young *oak* tree of the length and size wanted. If you are very nice about it you may square it with a broad-axe, or only flatten two sides of it

with your axe and carry it to the water-gap; there bore holes through it with an inch and a quarter, or an inch and a half augur, four and a half inches apart from centre to centre, then split it open so as to form the top and bottom parts of the rack out of it. After you have put in the rounds, wedge each one well both at top and bottom, and let them be of such a length that when the rack is finished, it will be from top to bottom three feet high. A water-rack ought not to exceed 20 to 25 feet in length; if the water-gap is wider than that, make two racks and in swinging them lap one about two feet over the other, but do not fasten them together, unless your hogs have become so knowing as to force their way between them, for the easier and lighter your rack swings the more likely is it to answer its purpose. The log or piece of timber which you intend to lay across the water-course to swing the rack to should be a good stout one, should not be more than eight inches or a foot above the top of the rack, should *lie level* and the ends be well weighed down with rock, or otherwise secured to prevent the water when it rises from carrying it off. If the banks of the water-course are high, sink the ends of your log or piece of timber in them, which should be laid across the stream as low as possible, so as to allow the rising waters quickly to get above it; for when that occurs, the danger of loosing your rack or log is greatly lessened. Swing your rack by tying it to the log in at least three places. If you use grape or muscadine vines for this purpose, do not twist them as you would do a hickory withe; if you do, they will last but a short time. Your water-rack at the upper water-gap, where the stream enters the field, must *not* rest on the bottom, whilst your water-rack at the lower water-gap, where the stream passes out of the field *should rest* on the bottom, so that the rack will hang with its top a little higher up stream than its bottom. If you or your neighbours own any learned hogs, drive down between the two rounds of the water-rack next to the bank of the stream, a stake, in size one-third less than the space between the two rounds, firmly into the bottom of the water-course, and tie it at the top to the log to which the rack swings, but do not let the top of the stake be any higher than the top of the log, or it may stop some drift timber, form a raft, and away goes every thing: this stake will prevent the hogs from pushing the rack one

side and passing through the gap. To prevent hogs from entering your fields by raising the rack, weigh it down by securing to the bottom of it a green log, but do nothing to it, which will prevent the rack from floating or rising as the waters rise, or it will be carried away by water soaked logs, which are swept along at the bottom of the water-course, &c. If the hogs dive under your rack where the water is too deep to allow you to sink your rack sufficiently deep to stop them, which some become sufficiently learned to do, tie a green log to the bottom of the rack, and let it hang down leaving from four to six inches between it and the rack, into which space the hogs will run their snouts, become perplexed and turn back. But do not resort either to the stake or green log unless it becomes necessary, for the freerer and lighter your rack swings the better.

A water-rack if made out of the materials above directed will last very well for two years, but do not trust to it the third or you may rue it. If you discover an old sinner climbing over your water-rack, shoot it, shoot it, no matter whose hog it may be, for such a one is *hostis humani generis*. Be careful after every rise of the water-course to examine your water-gaps, for your hogs will search it if you do not, and if they once find their way into your fields of grain by the water-gap, it is very difficult afterwards to keep them out. As simple as all this seems it would have been very useful knowledge to me when I first took charge of an upper country plantation, and so may perhaps be useful to some one else. But as I have not yet been able to make my water-gaps perfectly secure, perhaps some of your readers may know how to fix them better than I do, for information on which subject I should be thankful.

Yours, respectfully,

THOMAS PARKER.

ART. XII.—*Account of the Culture of a Corn Crop; by* M. W. P.

"Vicksburg, August 30, 1833.

Dear Sir,—According to promise made you in a former letter, I now endeavour to give you the mode pursued by me this season with my corn crop. My new ground required an uncommon deal of labour to put it in good order. It had formerly been covered with cane, it had gone to seed, died, some fallen down, and in this state was set on fire, the burn was not a good one, in consequence of which after gathering the brush, and cane of any size, rolling logs, &c. I was compelled to rake over the whole ground with hand rakes, which left it in beautiful order. I commenced planting on the 5th day of April, having previously beded up half of my cotton ground. I laid off the rows five feet and a half a part with a jumping plough (with shovel-plough coulter before-shovel.) Planted my corn nearly a half bushel to the acre, covered with the same kind of ploughs, by running one or two furrows each side of the rows. I ploughed it, worked and thinned; it when about three weeks old;* chopped out the weeds and grass once after, and will make 40 bushels to the acre. I began to bed up the balance of the land I now have in corn, and break out baulks on the 11th day of April, rows laid off 5 and 6 feet apart, and on the 14th day of May, I commenced planting corn, by running a shovel plough in the water-farrow; *planted* about the same quantity of seed, and covered with a Carey-plough. Thus planting below the surface, having most of the best soil above. I never saw corn come up of a fairer colour or more regular, and of course an elegant stand. I commenced ploughing, thinning and hoeing on the 28th of May; in fact, very little hoeing was now necessary. Put the corn in first rate order, leaving the stand from two feet to two feet 6 inches. I ploughed and worked over again; commencing June 18th, and gave the last working, except a small part that I had chopped out, wishing to leave it perfectly clean, intending to sow Timothy in the fall. This is decidedly the best corn I have seen, it

* I gave this piece the last *chopping* out on the 7th of June.

receives the praise of all who have seen it, standing the drought which you will see by my former letter, was from May 29th until July 13th, with occasionally light showers. The distance, I think, of much consequence, corn bearing heavier and better fodder.

I may say that this corn had scarcely a dry blade, and as to what is called "fireing," nothing like it; nearly every stalk has two good ears, and ought to turn off more than 40 bushels to the acre—very good for late corn. The surface of the land is now perfectly level, having ploughed down the beds thrown up. This is the mode much practised in the lower countries, and I understand with general satisfaction. So far as this crop will go, I can say, I give a decided preference to it. Corn in uplands generally much "fired," whereas mine was green to the bottom, and with the exception of a very small part, (a poor hill side,) not even a blade was twisted, and even this recruited every night.

Yours, &c.

M. W. P.

PART II.

SELECTIONS.

ART. VII.—*Notes on the Influence of Climate on Vegetation, taken at a Lecture by Professor Lindley on that Subject, delivered at the Rooms of the Horticultural Society, May 9, 1833; by* J. W. L.

[FROM THE GARDNER'S MAGAZINE.]

Every one who has paid great attention to plants must be aware that it is as important for their cultivators to know the kind of climate which is natural to them, as it is for them to know the nature of the plants themselves; yet very few gardeners have more than general ideas on the subject. They are aware that most exotic plants require heat, but their care of them is generally confined to this particular; and, without considering whether the native climate of a plant be moist or dry, or any other particulars respecting it, they keep their houses hot, and think that they have done enough. It is no wonder that many plants die under such treatment; and, that when they live, it is by mere chance, the gardeners not knowing the cause of their own success.

Nothing can be more variable than the nature of climates. Countries lying under exactly the same degree of latitude have them often essentially different: and it is necessary to know in what these differences consist, to be able to cultivate properly the plants indigenous to each. Before, however, explaining the nature of the climates from which the plants cultivated in British hot-houses are generally brought, it may be advisable to enumerate those points, in all climates whatever, which operate most strongly upon plants. The principal differences between climates are in their temperature, humidity, air, and light; all of which have a very considerable influence on vegetation.

Temperature is generally thought to be, and perhaps *is*, the most essential of all these points. No seeds will germinate under 32° of Fahr. and many require at least 50°. Excessive cold has a paralysing effect on plants: they droop, become languid,

their organs contract, evaporation diminishes, and consequently, by degrees they lose their power of taking food. Too much heat is as fatal to vegetation as too great a degree of cold; and nearly the same effects are produced, though from opposite causes. Excessive heat occasions such rapid evaporation, that the spongioles of the roots are not able to imbibe moisture fast enough to supply it; the leaves droop, and the plant dies. It is, therefore, clear that a proper temperature is indispensable to health of vegetation. Temperature acts more on the fluids absorbed by plants than on the vegetable tissue; and, consequently, plants in a dry state are the least likely to be affected by its changes.

Humidity is the next important point to be attended to in cultivation. A certain degree of moisture is requisite to render vegetable tissue elastic; and, unless it possesses this quality, it cannot expand into leaves and fruit. If kept too dry, the spongioles of the roots wither, and loose their power of absorbing food: the food of vegetables can, indeed, only be absorbed when it is in a liquid state. Water is thus essential to the life of plants: but in a certain degree of knowledge, as to their nature and habits, is indispensable, to enable a cultivator to administer it properly; as, if too much be given, and the plants kept too cold, they become dropsical, the leaves swell and rot off, and the plant dies. This is particularly the case with the Cácti, and other succulents; which are natives of a country subject to long seasons of dry weather, and absorb moisture much more readily than they part with it. When this is the case, if much water be given, the vessels become loaded with moisture, circulation is checked, and disease and death ultimately ensue.

Air is the next essential point to be attended to. From the atmospheric air, plants absorb the carbon which is considered necessary for their support. If you deprive them of atmospheric air, they languish, their leaves lose their colour, their flowers their scent, and their fruit its flavour; till by degrees they pine away, and die at last absolutely for want of food.

Light is the power which enables plants to decompose atmospheric air, and to extract from it the carbon which is necessary for their existence; but if exposed to more light than is necessary for this purpose, they are fed too fast, and die from over excitement. All the secretions which give taste and smell depend entirely upon light and air; and it is a remarkable fact, that all the most useful and finest flavoured fruits are brought from countries where they have abundance of brilliant light. Vines, Persian melons, dates, peaches, pomegranates, and many other of the most valuable productions of the vegetable world, lose their finest qualities if not grown in a strong light; while fruits which grow naturally in the shade, such as wild strawberries, apples, pears, &c., are generally acid, and, when analysed, are found to possess very little sugar. Important as light is to vege-

tation, it requires to be regulated by a strict attention to the native habits of the plants: too much and too little being alike injurious; and, if carried to excess, proving equally fatal in their effects.

Temperature, humidity, air, and light being thus proved to be all essential to the very existence of plants, it next becomes necessary to inquire what combinations of them are requisite for growing those plants most commonly found in our stoves and green-houses.

Many of our most beautiful exotic plants come from between the tropics: to know how to manage them advantageously, we must, therefore, consider what is the usual climate of their native region. These plants may be divided into seven classes, according to their habitats; and we take their native climates in succession.

The first class are those plants which grow in the open plains, exposed to bright sunshine, and enjoying abundance of air. Here there are two essentials, without which tropical plants of this description cannot be expected to thrive; viz., light and air: the latter being, of course, warm, to imitate that of their native plains. These countries are subject to long seasons of drought, followed by heavy rains, lasting for several months. The plants have, consequently, two distinct periods: one of growth, during which they require heat and abundant moisture; and one of repose, during which they also want excessive heat, but accompanied by complete drought. Very few gardeners ever think of this: even the more scientific are generally satisfied with learning the degree of heat which the plants can bear in their native regions; but the accompanying circumstances are rarely, if ever, taken into consideration. It is so difficult to imagine circumstances totally different from those by which we have been always surrounded, that very few gardeners can be persuaded to give their plants no water for several weeks or months, and to inundate them at another season: yet, without this treatment, the plants must be in an unnatural state, and cannot be expected thrive. Another important mistake is, keeping the stove at the same temperature during the night as during the day. Gardeners often appear to think that they have not done their duty by their plants unless they have made them quite as warm and comfortable for the night as, perchance, they would like to be themselves. Nothing can be more contrary to nature than this practice; as, in the most hot countries, the nights are comparatively cold.

Plants from the woody districts between the tropics require very different management from those which grow in the plains. Many of the orchideous plants, and the exotic ferns, grow in shady places, sheltered from every blast of wind, and flourish in an atmosphere almost stifling from its warmth and moisture.

These plants, if exposed to the same treatment as those from open plains requiring the same degree of heat, would inevitably die, as air and bright light would destroy them. In their native country, the epiphytes grow on the branches of trees (as ferns and other plants sometimes do in moist situations in Britain,) sending down their long fibrous roots in search of moisture, and requiring no soil save what may have been accidentally deposited on the branch which forms their habitation. Want of attention to this fact long prevented, or at least greatly impeded, the cultivation of this beautiful class of plants in stoves; and, even so late as 1822, the Berlin botanic garden, one of the richest in Europe, could boast of only nineteen species: now, there are above three hundren cultivated in the nursery of the Messrs. Loddiges alone; and very large private collections are to be found in various parts of the kingdom.

Islands between the tropics have a different climate from that of the main land, in the same latitude. They, even in the dry season, in the nights, have heavy dews. The plants from these countries require less repose; they are always in a growing state; and they should have nearly the same degree of heat in the night as in the day. The temperature, generally, should be more moderate and less varying. Many West-Indian and New-Zealand plants rank in this class.

A great number of valuable and favourite plants come from Africa, a country which varies very much in its climates. The regions from which most of the African plants are brought may be divided into three classes. In the first, the neighbourhood of Senegambia, the Congo River, and settlements on the coast of Sierra Leone, there are, alternately, wet and dry seasons. During the latter, the face of the whole country appears parched and withered; but, immediately that the rainy season commences, the whole vegetation of the country bursts into life. The plants grow with a luxuriance and rapidity scarcely to be conceived, immense leaves unfold themselves, and the soil is covered with a dense mass of rich verdure.

The immense arid plains extending from the Cape of Good Hope into the interior of Southern Africa, known by the name of the Great Karroo, or Desert, present a scorched and barren surface during the greater part of the year. The plants never grow close enough together to give the appearance of a mass of vegetation; and, during all the dry season, extreme sterility is the characteristic of the scene. But, as soon as the rains fall, the whole face of the country suddenly changes: bulbous-rooted plants push up their innumerable leaves and gaudy flowers, the Mesembryánthema unfold their glittering blossoms, and, for a brief month or six weeks, Flora occupies the karroos in her gayest forms: but, in August, the sun overcomes the humidity of the air and earth; leaves wither up; flowers perish; dry fruits ap-

pear; and, presently, nothing remains to view except plants with either hard and dry, or extremely succulent leaves, to enable them to absorb moisture from the atmosphere, and to impede too rapid an evaporation during the dry months.

In Mexico, the climate is generally temperate; but the mountainous parts differ very considerably from the plains. Bagdad is subject to variations of intense heat and cold, and occasionally to heavy rains.

In the polar regions, where there is perpetual light during six months of the year, and darkness during the remainder, the plants are weak and stunted. They growly slowly; and trees, large in other countries, dwindle down to the size of shrubs.

Besides the differences of climate already enumerated, there are other circumstances which require the attention of the gardener. One is the effect produced by the pressure of the atmosphere. Mountain plants will not thrive well in plains; and will die there, though enjoying exactly the same heat as in their native countries. Light, it has been already shown, has a very material influence on vegetation. When exposed to it, plants give out their oxygen, and evaporation proceeds rapidly. Mountain plants are generally covered with snow during winter; and thus enjoy a season of complete repose, and equal temperature, in darkness. When plants thus habituated are long exposed to the light, they are too much excited, and become so feeble as to be unable to resist the cold. Experiments have been tried for keeping alpine plants in darkness during winter, which have proved successful.

Almost all plants require alternate seasons of repose and growth; and many, if forced too much, and kept continually growing, will die. As an instance of the power of rest: from accidental circumstances, a pant, generally difficult to flower, was found to grow 7 feet high in one season, and was covered with thousands of blossoms. The plant had been forced very rapidly; and afterwards, in order to make room for others coming into flower, put away in a dark place, and completely neglected for several months. It had thus a complete period of rest; and when again forced, it blossomed profusely, as before stated, and was never seen finer in China. Nothing can be more at variance with the ordinary practice of gardeners than this treatment: it is, indeed, impossible, where plants from different countries, and, of course, habituated to different climates, are all mixed together in one house. Plants, when in a state of repose, have also an untidy and desolate appearance; very annoying to gardeners, who pique themselves on their plants always looking well.

To cultivate exotic plants well, every gardener should have seven or eight different houses, each of which should be devoted to plants requiring a particular climate. This would render collections of plants much more interesting than they are at pre-

sent; since, from the power that all plants possess of accommodating themselves to circumstances, those cultivated in stoves in Britain are in a decidedly artificial state, and retain but few of their original habits. Many of the peculiarities of the different climates which have been enumerated may be easily imitated: where excessive light is required, the houses should have iron frame-work, and white clear glass; where less light is wanted, wood frame-work might be employed; and, for those plants which require shade, to wooden frames might be added green glass, or netting, or climbers, or even wooden shutters. It is not more difficult to give proper proportions of air and moisture. Vapour is easily produced for those plants which require a suffocating moist heat, by throwing water on a heated floor. In this manner, with such additions as will, of course, suggest themselves to an experienced gardener, the native climates of almost all kinds of plants may be correctly imitated; but it can never be too often repeated, that all will be comparatively useless unless the plants are allowed proper periodical rests. The taking up of tulips and hyacinths, and of the roots of georginas, &c., affords an illustration of the same principle. Nearly all foreign bulbs die after the first season, if left to winter in the ground.

Such was the general purport of Dr. Lindley's lecture; into which, however, a great deal more was introduced than we are able to note down. As climate is a subject than which nothing more interesting to gardeners can be named, and on which scarcely any thing is known correctly, it is to be hoped that Dr. Lindley may be induced, on some future occasion, himself to lay the detailed result of his inquiries before the public.

J. W. L.

Art. VIII.—*Culture of Sugar-Cane in Louisiana.*

[From the Manual on the Cultivation of the Sugar-Cane, and the Fabrication and Refinement of Sugar. Prepared under the direction of the Hon Secretary of the Treasury, in compliance with a Resolution of the House of Representatives of January 25th, 1830.]

Preparation of the Land.—The sugar lands of Louisiana, from the low level at which they lie, are redeemed to agriculture by the ditches which are run back from the Mississippi, or the smaller streams upon which they are situated, into the contiguous swamps, which sink in level as they recede from the rivers,

until they reach the Gulf of Mexico, or the lakes and bays which make inland from the Gulf. These ditches proceed back, at right angles to the river upon which the plantation lies, and extend in perfectly straight lines to a distance, from one to two miles, increasing in width and depth as they recede, until they finally inosculate with some natural drain, which receives, more or less perfectly, the waters they discharge, and carries them off to the sea. The natural drains owe their origin to the overflowing of the rivers, and to great rains—causes that were in operation previous to the construction of the ditches: they pursue an irregular course, whose general direction is a diagonal, between that of the river and the artificial drains. Their beds are broad, often enlarging into a kind of lake several hundred feet across. In carrying back his straight ditches, the planter often intersects the head of these little bayous which are thus dried up as he proceeds, and their broad and circuitous beds are redeemed for cultivation; while every part of the plantation is thereby rendered more dry and arable.

Very considerable differences, of course, exist on different estates, with respect to the intervals allowed between these ditches; and which arise in part out of the slope of the land in different districts. Two kinds of ditches are sometimes employed; one large, the other small, occuring alternately—the larger being situated two acres apart. At their commencement near the river bank, or levy, they are narrower and more shallow; and they go on increasing in capacity as they run back. The large drains may be said to have an average width, at top, of five feet, and at bottom, of three, by two and a half in depth; while the narrow drains are two and a half, at top, and one and a half, at bottom, by one and a half deep. On the French plantations, the narrow drains are frequently omitted; the wider ones being situated two acres apart. Occasionally, a ditch is constructed nine or ten feet wide, at top, and proportionably deep. These ditches are carried into the swamps, a quarter, or half a mile beyond the border of cultivation; and whenever the planter would bring more land under cultivation, the preliminary measure is, to extend his ditches further into the swamp. Through the middle of the plantation runs a road from forty to sixty feet wide, with ditches on both sides; and when the plantation is wide, other parallel roads, of about half this width, are situated at distances of nearly a quarter of a mile. The sugar-house and settlements are generally situated upon the main road. Cross-roads, about four acres distant from each other, and twenty or twenty-five feet wide, with a shallow drain on one side or on both sides, divide the plantation into rectangular lots of four acres each. Across

these lots in the centre, shallow drains are made with the plough, dividing the field again, so as to form two acre lots.

The land, thus divided off, is prepared for the cane by being ploughed into furrows lengthwise of the plats, and harrowed; after which, it is drilled in the same direction, at distances varying between thirty inches and six feet, according to the newness and strength of the soil; when the canes are laid in the furrows, in pieces of from two and a half to four feet in length—being so placed as to form two parallel rows in the furrow, three or four inches apart. The two rows of cane in one furrow are not continued in all instances without breaks; but at least one row and a half is invariably maintained. They are covered with, from one to three inches of earth, according to the season of the year in which the planting is done.

Planting.—In describing this process, it will be most convenient to begin our account with the period when the canes are ripe. By the last of October, in ordinary seasons, more or less of the cane attains its usual maturity for this climate. When this period arrives, the first thing to be done is to make provision for future crops. This early attention is given to the saving of seed on account of the injury occasioned to seed-cane by frost, and which is liable to occur before the middle of November. The general rule observed in saving cane for planting, is to reserve such a portion of the crop as is the least valuable for grinding. Accordingly, those fields which have produced cane from the same stubble for two, three or four years, and which now require, from the stinted growth they produce, to be replanted with cane or some other crop, are selected to furnish seed-canes. The canes, or rattoons, as they are called from such fields, are small and short, having the joints more approximate, which is considered as an additional recommendation in their employment for planting, as every joint sends up cane shoots, and thus contributes to a fuller stand of cane than when the joints are farther apart. One acre of such rattoons is sufficient, in ordinary cases, for the planting of three acres of land. They are cut near the ground, and carted to the vicinity of the fields where they are to be planted; being formed, when not planted as soon as cut, into long beds about fifteen feet wide, which are called *mattresses.* These are formed by commencing at one end of the bed, and placing a row of canes, with their tops on, across it—the tops directed outward. Upon this, a second row is superimposed, with this difference, that the buts are placed about eight inches or a foot in advance of those of the first row. Upon the second row a third is placed in like manner, and so on. By this arrangement the lower part of the stalk is preserved from the cold, by the tops; excepting in two or three layers across that portion of the mattress last formed, where the protection is effected by four or five inches of earth.

But a part of the planting is done with cane tops, or that portion of the cane which is rejected in cutting it for the mill, and which consists of about three feet of the top of the stalk, to which the green leaves are attached at the time of gathering the crop. These, when not reserved for planting, are suffered to remain on the field, for the protection of the stubble; but when cut for planting, it is usual to cut them one or two joints lower than common, and to form them into wind-rows across the field—the tops from two or four rows being thrown into one, which is arranged, as respects overlapping, after the manner of mattresses above described. The fields from which the cane tops are derived for planting, are frequently those which were planted the previous year, and in which the cane is high, and somewhat prostrated at the commencement of the grinding season; in consequence of which, it requires to be cut the earlier, to prevent it from rooting at the lower joints.

The provision for a future crop, above described, is made earlier in the northern part of the cane district, where they are more exposed to the access of frost, early in the season.

When the extent of the force on a plantation will allow, the land is planted as fast as the seed cane is cut. The driest fields are selected for this early planting. It is thought to be attended with decided advantages—insuring to the cane more generally the life of the buds, than when in mattresses, and giving it an earlier start in the spring. Canes planted at this season, are covered to the depth of three or four inches.

The remainder, and indeed by far the greatest part of the planting, is deferred until the grinding season is over, which varies from the twentieth of December to the middle of January; and often, it is not completed before the first of March. The covering given to the canes is more and more shallow as the season advances, until towards the close of February, when it rarely exceeds two inches.

In relation to manures, and the distances at which they plant, these points are regulated by the newness of the lands. These are first brought in from the condition of swamp by carrying back the drains, with a view to get rid of the water, as has been remarked above, and by cutting down the trees, and setting fire to the rubbish. The first crop is Indian corn, which is planted with hoes. It is picked early in autumn; and the crab-grass, *(Digitaria sanguinalis)* which comes up abundantly on new land, is cut up with hoes, and stacked for winter feed. The land is now drilled for the first crop of cane, by a plough, without a general ploughing—the furrows being made from four and a half to six feet apart. The kind of cane planted is red ribbon; because it is found to be the most hardy variety, and does better than either of the others in rich and wet lands—the canes it affords the first year being fit to grind, and being used for seed. When

lands have been worked for many years, the other varieties are employed, in various proportions, excepting in the northern sections of the cane district; where, from their liability to frost, the red ribbon is almost exclusively used on all kinds of land. After land has been once planted with cane, the furrows are, ever after made much nearer together—the average distance being about three feet from centre to centre for creole cane, and four feet for Otaheite and red ribbon. The red ribbon rattoons are the best, the creole are next, and the Otaheite are scarcely planted at all, excepting in the latitude of New-Orleans, and there only for one year.

As a general statement, it is true that no manure is used; but the land, when tired of cane, which does not happen short of eight or ten years from the time of its being brought in from a wild state, is planted one or two years to corn with peas (beans), which perfectly restores it to full tilth for at least three years after. In general, the ploughing is not deep; but when the culture is changed from cane to corn or peas, the ploughing is deeper, in order to bring up a fresh soil, and to destroy the roots of the cane.

Culture.—As soon as the black frosts are over, and the ground becomes sufficiently dry, the covering of the cane that was planted in the autumn or early winter is reduced to one or two inches, by scraping with hoes the earth from the tops of the hills, towards the centres of the alleys between the rows. After this, the hoes, followed by the ploughs, are passed through the fields about every ten days, in order to keep down the grass and weeds. When the cane has grown eighteen inches high, a small quantity of the earth is drawn back to the plants; and in the course of the two succeeding dressings, a bed is formed for them, five or six inches in depth. In new land, notwithstanding the weeds, much less hoeing is done, on account of the luxuriance of the cane in such lands.

The stubble cane is, in some measure, protected from the frosts of winter by the covering of tops left on the rows in harvesting the cane. In the spring this is burnt off, and the portion of cane-stalks which remains after the fire has run over the fields, is carried out into the roads. A plough is now passed along on each side of the stoles, turning the earth from them into the alleys. When the shoots have got up five or six inches, they commence restoring the earth to the stubble; and treat the fields in the manner described above for plant cane.

A partial deviation from the above practice, with rattoon canes, has been adopted, to some extent, in the southern section of Louisiana. When the winter is mild, and the buds of the tops which are left in the field are generally alive, the tops are stripped of their leaves, and the stalks are laid down in a furrow made on the side of the stubble row. This is done for the purpose of

obtaining a fuller stand of cane than the stubble alone would afford.

In consequence of the effect of frost upon the stubble, the rattoons of even the hardiest variety, the red ribbon cane, are so deficient when suffered to rattoon a third year, that the practice is becoming extensive in the southern portion of the cane district, to plough up the fields after the second or third year of rattoons, and to replant with cane, or to plant with peas, according to the strength of the land: while for the same reason, in the upper part of the cane district, it is considered a judicious system of planting on land which has been long in use, to put down one-third to plants, one-third to corn and peas, and to retain one-third in rattoons.

It is a part of the system of cane planting in Louisiana, to raise as full a stand of cane upon the ground as possible—experience having proved that more sugar is obtained from the land, than when it is so planted as to allow a free circulation of air among the plants. Neither the cutting up of suckers, nor the trashing of cane is practised.

The order in which the different varieties of cane are injured by frost, is the following: the creoles suffers first, the Otaheite next, and the red ribbon least. In the cane district situated half a degree north of New-Orleans, they suffer from frost nearly a fortnight earlier than in the lower section of the State. When the frost is very severe, they cut the cane down as soon as possible, with the tops and leaves on, and suffer it to remain in contact with the ground until it is required by the kettles. The advantages of this course appear to depend upon the gradual change of temperature which ensues when frosted cane is placed in contact with the earth, and in its being liable to fewer fluctuations from heat and cold afterwards, when in this position.

Notwithstanding the susceptibility of the creole and Otaheitan canes to injury from frost, sugar planters in the vicinity of New-Orleans, and farther south, plant at least one-third of their crop in these varieties. The inducement to have a part of the plantation in Otaheite cane is, that if the season is a warm one, its yield is very great; while that for creole arises out of its being suited to old lands, and if the frosts keep off, it affords a more beautiful variety of sugar than either of the other kinds, is handled with greater ease in harvesting, and cost much less fuel for the evaporation of its juice. It is agreed, however, that the red ribbon cane is the variety which best suits the climate.

No complaint is as yet made of insects, in the cultivation of the cane in Louisiana.

The carting of the canes, during harvesting, is attended with a heavier expense, and with more trouble than any operation in the growth of the cane. The roads are often rendered excessively heavy and nearly impassible, from the rains that occur

during the rolling or grinding season, which oblige the planter to maintain a great force of men and animals, to keep the kettles in operation. Besides, the driving over stubble cane, which might, however, be in some measure avoided, is productive of very considerable injury to the succeeding crop. It requires from ten to twenty carts to furnish canes for two sets of kettles, in proportion to the distance of the cane from the mill, and the nature of the roads; an average number for the season may be sixteen. The manner in which the hands are distributed during the cutting season is the following, supposing the force adapted to a sugar-house with two sets of kettles: forty hands, with knives, thirty-five to forty binders, or cart-loaders, twelve to twenty cart-boys, eight to supply the mill with cane, (who are stationed at the mill,) six kettle-men, two stable-boys, two boys at bagasse (ground cane) carts, three fire-men, two to wheel wood to the furnaces.

The average yield of the sugar-cane in Louisiana may be stated at one thousand pounds of sugar and forty-five gallons of molasses to the acre, taking one year with another. With tolerable plantership, it may be stated on lands well subdued at twelve hundred, and with superior attention, at fifteen hundred. In a few instances, when the seasons have proved favourable, we have heard of two thousand, and even twenty-five hundred pounds, or more, to the acre, on fields of small extent.

Art. IX.—*Horizontal Trenching, to prevent the washing of Hilly Lands; by* James C. Bruce.

[from the farmers' register.]

The interest which your journal has already excited among the agriculturists in this section of the country, furnishes some ground for hope, that the improvement of the lands on the waters of the Roanoke, where there have been most neglected, (or to speak more correctly, where they have been most butchered,) will at last occupy the serious attention of our farmers. We heretofore wanted an outlet to the ocean—tobacco has been our only crop, and we have experienced, to the fullest extent, all the evils attending its cultivation. Our lands are nearly exhausted, and we are now on the look out to discover some means of restoring their fertility. A desire to improve, begins pretty gene-

rally to prevail: information is what we want—you have in your valuable journal, given us much, and will no doubt give us more. The Farmers' Register is beginning to attract attention, and many inquiries are made for it; and I hope the time will soon arrive, when it will be in the hands of our agriculturists.

The wheat crop is becoming more profitable, as the facilities of market have increased, when that from Portsmouth is complete. Manufacturing mills of improved construction, are being erected on our water courses, and we have every reason to believe, that wheat will be the great staple of the valley of the Roanoke, the soil and climate of which are as well adapted to its culture, as those of any part of Virginia.

The great impediment in the way of improvement of the lands of the Roanoke, (I speak more specially of those countries on its two great branches, the Dan and Staunton,) is the unevenness of the country. You who reside within the limits of tide water, can scarcely estimate it. We manure our land carefully, and the first heavy rain carries that, and what soil there may be, to the bottoms. This single circumstance, viz: the brokenness of our country, has done more to repress the progress of improvement, than every thing else together. Why manure land, when the first rain may sweep it entirely away? Hence, what little manuring is done, is pretty much in the following manner. The owner of five hundred acres of land, selects some level spot of about 25,000 tobacco hills, (6 or 7 acres,) convenient to his house. This he lays off for tobacco: it is cultivated every year in the same crop, and every year he puts on this favoured spot every particle of manure which he accumulates, or rather which is accumulated, for he pays no attention to the subject. The end of ten years, finds his lot in about the same state as at first, and the balance of his plantation exhausted. This history of a single plantation, is the history of the whole Roanoke country. To us, then, improvement is not choice, but necessity. But to give you this mournful account of the sad state of our agriculture was not my intention when I sat down to write you. It was rather to tell you what we were doing, that what we had omitted to do—to comply with the request of a mutual friend who solicited me to give you some account of a method practised by a few persons in Halifax and Mecklenburg, for the protection of their hill sides from the effects of washing rains.

This system is technically called *trenching*. Who was the inventer I know not. It was first practised as far as my knowledge extends, by Mr. Skipweth of Mecklenburg. His lands are exceedingly broken, and he has carried the system to such perfection, as to put an entire stop to washings by the heaviest rains. So much so, that I have heard of his saying, that not a pound of soil was lost on his extensive estate, by the greatest fall of rain. I wish the application had been made to him, rather

than myself, to give the public information on this subject. He is, indeed, a good cultivator—an enlightened farmer, practically and theoretically—while I am a tyro—a young man and a young farmer—eager indeed to learn, but unable to teach. I have practised the system for three years—the first two years it was badly done, for want of experience. The corn land for the present year is better done, and I may safely say, that in an extensive field of about two hundred acres, as broken as any in Virginia, there is no washing, nor a single corn-bed broken by the rains.

The first thing to be done, is to lay off the trenches. This must be correctly done, or instead of conducting the water gradually off, and preventing the wash of soil, the land will soon be intersected by deep gullies. The *level* here most in use, is what is familiarly known by the name of the rafter level. It consists of two pieces of scantling, about nine feet long, lapped at an angle of 45 degrees, (or squared,) making a span of twelve feet. The shanks should be precisely of the same length. From the apex, a line is suspended with a plumb at bottom. Across the shanks, a piece should be fixed, on which notches should be made to mark the variations of the plumb line. But it is useless to describe particularly, what every one is acquainted with. Different persons use different levels, though this I think the most convenient. To be certain that your level is correct, take a plank and adjust it so, that the plumb-line falls in the centre: if on reversing the level, or turning it, it still falls on the centre, your level is true and may be depended on. I will here state that your trenches should have a fall of about three-fourths of an inch in twelve feet, for the span of the level. Some persons prefer more fall, in order to prevent the trenches from filling up; but it is a great mistake, as *ceteris paribus*, the more fall, the more apt they are to fill up. Where there is much fall, the dirt is carried away, and where it comes to a place where there is less, it will of course be deposited and fill up the trench. It is then the accuracy of leveling, and not the quantity of fall, which prevents the filling up. To prove this, a spade ditch, running down a steep hill, where there are inequalities of descent, will fill up. Three-fourths of an inch may, therefore, be considered a very ample fall in twelve feet. Having made your rafter level, and adjusted in your mind the necessary fall you should have, you are ready to proceed to lay off your trenches.

Your hill side for instance, is somewhat steep, and measures 100 yards from the top to the bottom, with a valley running up on each side. About 30 yards from the top, equidistant from the drains on each side, you take a station—commencing there with the level, you lay off a trench (with the necessary fall) to the drain on the right, making marks with the foot, or in some other way, as you go along. You then return to the point from which

you started, and proceed to the drain on the left. The water is then let off in different directions—thus avoiding the great accumulation of water which would take place in one long trench. You then pass down the hill 30 yards farther, and lay off another trench in the same manner—and so on for a third. Where you have to go a long distance to get a bottom to empty the water, it might be in some instances advisable to make a straight spade ditch three feet by two, right down the hill to receive the water of all the trenches making into it. You need not be afraid of a gully. Gullies are formed by the pouring in of water down the sides; and the trenches avoid this. The natural tendency to fill up, will pretty nearly counteract the effect of abrasion at bottom.

Having laid off the trenches, the next step is to make them, and which is done in the following simple manner. The leveller having previously marked the line of the trench, walks upon it, with an accurate ploughman with his plough following him, making a furrow where the trench is to run. Three furrows should then be run below, with a large dagon plough, the mould-board on the upper side, and four above, with the mould-board on the lower side—they should then be opened with hoes, drawing the dirt of the four furrows on the three below, which makes a good solid embankment, with a trench about three feet wide at the bottom. This work is done with great ease and despatch—one hand being able to accomplish 200 yards. It may be as well, however, to observe here, that some very judicious men, (among the rest, Mr. Skipweth,) are in the habit of making their trenches with the spade three feet broad and two deep. This, however, increases the labour four-fold, and is, I think, of no real advantage. The difficulty of passing them with wagons and carts, is a serious evil. You have bridges to build, in order to cart your corn and small grain over them, which would require a quantity of labour, that few farmers could afford to bestow. I must repeat to you, that every thing depends on correct levelling.

This system of correct trenching, will be of incalculable value to those who cultivate broken lands, and this class must embrace a large portion of the farmers of Virginia. Three years ago, there were scarcely as many persons who practised the system in this county. All the prejudices against innovation were excited against it. It was affirmed by some, that it wasted too much land: but what is the loss of one or two corn rows on a hill side, compared with the total waste of soil, which is caused by a few years of cultivation. Others object, that it makes gullies. This is the effect of bad levelling—but I can affirm, that most of the trenches I have ever seen or made, were better than none; if one gully was produced, a dozen was stopped. These prejudices have pretty well subsided—and our best cultivators, satisfied of

the great benefits of trenching, have very generally adopted the system.

JAMES C. BRUCE.

Halifax, Sept. 20th, 1833.

We believe that the foregoing letter will not require any editorial recommendation or comment, to command the attention which the subject so well deserves. But as the practice described by Mr. Bruce, has scarcely been heard of on the broken lands of the tidewater district, where it may be so beneficially introduced, we will venture to offer our opinion in favour of horizontal ditching, though it will be useless, if not obtrusive, to all who have more experience on this subject.

Proceeding upon very imperfect verbal information (then recently obtained) as to the manner and the benefits of this operation, we tried a ditch of some 500 yards in length, on a slope cultivated this year in corn, which had been very much washed and gullied by heavy rains under former tillage. The repeated heavy rains during the summer, tried well, and established satisfactorily the efficacy of the plan. The labour of making the ditch with the plough was inconsiderable—it caused but little inconvenience in the subsequent tillage—and the plan effected all the benefit which has been promised, but not obtained, from the difficult and inconvenient horizontal ploughing for corn, in beds and water furrows.

The damage caused to all our broken lands by the washing away of the soil by rains, has been much greater than all the exhaustion by the growth of crops: and to arrest this agent of destruction, even at this late period, will be incalculable benefit to our country.—*Ed. Register.*

ART. X.—*Uselessness of Earthing up Growing Crops of Potatoes; by* JOSEPH HAYWARD.

[FROM THE GARDNER'S MAGAZINE.]

Sir,—I would offer a few hints that may aid the endeavours of those who advocate the benefiting of the condition of the poor: they may contribute to increase the objection which some have urged against exhausting the powers of labour. Mr. Knight's observations regarding the potato are valuable; but there is one

laborious operation commonly resorted to in cultivating this vegetable, which I think has not been sufficiently considered; and which I am convinced by more than ten years experience, is superfluous. Observing that a farmer, in managing a field of potatoes along side one of mine, did not earth them up, but simply flat-hoed the surface of the soil to clear away the weeds, while I had mine earthed up with great care, I determined on noticing the difference on taking up the crop; and, to my astonishment, he had 14 tons per acre, while I had not more than half the quantity, and his potatoes were of a more marketable quality than mine; being generally of a good size, while mine were large and small. The result induced me to question the farmer; and he told me it was a practice he had followed for many years, as he thought the earthing up was worse than labour thrown away; that a year or two before, he had obtained 19 tons per acre by the same management. This statement put me upon considering the principles upon which such a result was founded; and it appeared to me that, by drawing up the earth over the potato, in sloping ridges, it was deprived of its due supply of moisture by the rains; for, when they fell, the water was cast into the ditches. Further, in regard to the idea that, by thus earthing up, number of tubers is increased: the effect is quite the reverse; for experience proves that a potato placed an inch only under the surface of the earth will produce a greater number of tubers than one planted at the depth of a foot. From reasoning thus, I determined to adopt the practice: however, such is the force of prejudice, that I have been able to make but few proselytes. A year or two since, I prevailed on a clergyman to try the practice on a strip of half an acre, running through a large field, treated in the common manner; and he told me that, on taking up the crop, he did not find much difference in the gross quantity; but that those which had not been earthed up were, more generally, of a good size; not so many large and small as the other part of the field. I have no doubt, if potatoes are planted shallow, and placed wide enough apart to admit of the stems being laid down after the young potatoes are formed, and to have the earth between them thrown over five or six inches thick, so as to form a flat surface, that it would increase the crop. But this is a very different operation from that I object to.

I am, Sir, yours, &c.

JOSEPH HAYWARD.

L. of C.

ART. XI.—*Preparations for Watering Peach Trees, &c.; by* JOSEPH HEYWARD.

[FROM THE GARDENER'S MAGAZINE.]

Sir,—It is well known, that although trees of the peach, apricot, plum, apple, &c. are well furnished with blossom buds, the blossoms often fail in their impregnation, and fall off; and, when they are impregnated and set, they fall off at the stoning; frequently, although they survive the stoning, they become prematurely ripe and fall off, and very few, if any of the fruit attain maturity; while those which do, become vapid and without flavour. These failures I have proved to be the effect of unwholesome food; and having found a remedy in a simple preparation, I beg the favour of such of your readers as have an opportunity to make a trial of it, and to state the result. Having selected a tree that is in good condition, and well furnished with blossom buds, just as the blossoms are beginning to expand, take a potato fork, and with it make holes all over the surface of the space occupied by the roots (which extend as far from the stem as the branches,) at about 18 inches apart, by forcing in the fork to the full depth of its tines, and giving it a gentle heave, by pressing on the end of the handle; then, having dissolved some nitre in water, (in the proportion of one ounce to three gallons of water,) fill the holes with the solution. No manure must be given; but if, after the stoning of the fruit, the tree should appear to be unequal to sustaining its crop of fruit, the following preparation may be given, in the same manner as the nitre:—To one gallon of blood add one gallon of water and one ounce of potash; stir the mixture well, and let it stand for a week or ten days; then pour off the solution from the clot, and, mixing one gallon of this liquid with four gallons of water, give it to the trees as above. The remaining clot may be dissolved by adding to it one quart of slacked lime and one gallon water to one gallon of clot; but this solution must not be given to fruit trees, as it will produce the effect which the nitre is intended to remedy. It will, however, prove a good manure for the cabbage tribe, as asparagus, celery, &c. This discovery, which I consider to be of great value, I made some years since; and, as it is not merely accidental, but the result of a regular course of experiments, made with a view of ascertaining the nature and effects of the food of plants, and is founded on physiological and chemical principles, it will, I have no doubt, lead to the establishment of a much more perfect system of manuring than is at present practised.

I am, Sir, yours, &c.

JOSEPH HAYWARD.

Art. XII.—*Useful Properties of the Common Artichoke.*

[FROM THE BOSTON MEDICAL AND SURGICAL JOURNAL.]

We find among the thicket of dull and speculative essays that crowd the late numbers of the English Medical Journals, a few of rare practical value, which we shall not fail to transplant to our pages. At present we wish to ask the attention of the faculty to the medical use recently made of the common artichoke. Several cases are detailed in the London Medical and Surgical Journal, in which rheumatic affections yielded very decidedly and speedily to the internal use of the juice of this plant.

The botanical name of this plant, as the reader well knows, is *cynara scolymus*. The *leaves* should be gathered before their vitality is affected by the frosts. The fibrous and fleshy portions of them should be cut into strips, and by bruising in a marble mortar the juice is readily extracted. In order to preserve this juice, one-fifth part of its weight of alcohol may be added to it, and in this way it is equally valuable for use, if not more so, than when wrought into the more expensive form of extract or tincture.

The efficacy of this medicine in rheumatism has been stated by several medical gentlemen within a few months, and we will content ourselves at present with offering the 1st and 4th of the cases last published, in the work before mentioned.

"The first case is Elizabeth Harper, ætat 75, a hale and strong woman, inhabiting a very exposed situation. On June 10th, complained of acute pain in both wrists, which on examination I found to be painful on being touched, and very much tumefied; bowels very regular, free from fever; pulse 80; tongue clean; pain aggravated at night. Gave the following mixture:—℞ Succi cynaræ, ℥iv. Syrup. simp. ℥ij. Aq. font. ad ℥vj. M. Capiat partem iv. am octavis horis.

11th. Pain much relieved; swellings slightly reduced; has passed a better night.—Continue medicine.

12th. Pain has ceased; swellings considerably less, and wrists no longer tender. A gentle apperient was to-day necessary.—*Cont. Mist. Cynaræ.*

14th Quite well. The wrists have regained their proper size, and their hands their use. This patient continued quite free from pain until the 3d of this month (August,) when she complained of pain in one shoulder, similar to what she had felt at the wrists, and begged that she might have some more of such medicine as she had on the former occasion. It was immediately sent to her, and she was relieved as before.

August 3d. Samuel Fleur, ætat. 36, complains of considerable pain in his right shoulder, which prevents his taking any rest

at night, when it appears to be slightly aggravated. Bowels confined; pulse 90, and tongue white. Gave—℞. Magnes. Sulph. ℥iss. Syrup. Sim. ℥ss. Aq. Menth. Pip. ad ℥vj. M. Capiat coch iij. mag. pro re nata, secudis horis.

4th. Bowels relieved soon after finishing the mixture; pain in the shoulder unabated, limb incapable of being moved from extreme pain and stiffness; pulse 80.—℞. Succi Cynaræ, ℥vj. Aq. Menth. Pip. ℥vj. M. Capiat part. iv. am nocte maneque.

5th. Relieved; pain in the shoulder less; has slept for the first time for three nights.—*Perstet.*

7th. Gradually improving; bowels in good order; tongue clean, and pulse 70; shoulder less stiff.—*Perstet.*

12th. Is now so far recovered as to be able to go out to glean corn, and has discontinued medicine.

In more acute cases I have found the same medicine equally useful after bleeding, and in many cases where I had previously given the *Pulv. Ipec. c.*, antimonials, and the whole tribe of medicines usually esteemed in the treatment of this class of disease, without effect.

Art. XIII.—*Management of Colts; by* Allen T. Lacy.

[from the goodsell's farmer.]

"South Chili, November 25, 1833.

Mr. Goodsell,—Sir—Having noticed among the selections in your useful paper, an article from the New-England Farmer, signed James Walker, describing his, and an excellent manner of breaking steers and colts, induces me to lay before you a different course of management with colts, which I have adopted for several years with perfect success.

I have experienced some difficulty with old horses being refractory, and baulky, in the harness, having formed a habit of becoming sulky, on the least emergency, and refusing to go *at all*, and have frequently witnessed the delays and troubles attendant on such habits, and the excessive beatings which the poor brutes are often subject to for want of being properly managed at the beginning.

I therefore, to avoid all such troubles, commence with the colt about one week old. I halter him, and tie the halter around

his dam's neck, and lead her for somes minutes. After some feeble resistance, the colt submits, being easily induced to lead by the side of the mother. I pursue this for some weeks, once a week, allowing a boy to ride the mare. In the mean time, I hitch the colt to a firm post, which it will pull at, but to no effect; then handle him from head to foot, frequently coming up to him till he is satisfied that there is no unfriendly intention. When the colt is about three months old, and has acquired a good appetite, choosing a warm day, I hitch the mare and colt, at a little distance from each other, and after about two hour's abstinence, I draw the milk from the dam, and present it to the colt, which he soon learns to milk. By repeating this a few times, he drinks readily, when the milk from cows, may be substituted for that of his dam. When weaned this practice will be found beneficial as the loss of flesh may be prevented, and the colt kept in a growing condititon. Cots thus practised will not refuse sour milk although it has become thick.

The benefit of this practice was fully demonstrated with a colt of mine, which at two years old, from unskilful castration, was reduced so low, that he was not able to rise alone, or receive any kind of food except milk, and not more than one pint of that at a time, as even that quantity in some instances produced almost fatal paroxisms which lasted several minutes. In this instance a few gallons of milk saved his life, and he is now a valuable horse.

At two years old I bit my colts thoroughly, but never allow them to be treated harshly. Occasionally before they are three years old, I put a harness on them, and lead them. I next put on a blind bridle, traces and whippletree, with a rope or chain attached to it, held by a man who pulls it gently as the colt inclines to draw, being carefully not to stop him. I next put a well broken horse by his side, harness them together, and attach a double whippletree, with as many men to hold it as is necessary to require all the colt's exertions to draw them, letting the traces from the beginning play freely against his legs so that he shall become familiar with them. I next attach the reins and take a whip, continuing yet to lead him, occasionally snapping the whip, with corresponding actions calculated to hasten his speed. The colt soon learns the use of the whip and what is meant to be communicated by it, and hastens his speed accordingly. I next hitch the span to a lumber wagon, tying that end of the whippletree to which the old horse is hitched back, so as to keep it square, to prevent him from throwing the colt back, by his superior strength. In this manner I drive them for some time, occasionally stopping where there is a gentle ascent in the road, so that the wagon will move backward, and with gentle pulling upon the reins, learn the colt to travel backwards, and by re-

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peating it often in various places, he soon learns to comply in this respect with the wishes of the driver without contracting any refractory habits. I continue using him in this kind manner, being careful never to overload him, until his age and experience will justify putting him to heavy loads.

The best method with which I am acquainted, for breaking colts to the saddle, and on which I have practised with perfect success, is to take them from home in company with a horse, with which they are acquainted, there to get on and off from them, several times, until they submit to being mounted without resistance, then let the riders mount both the old horse and colt, the rider of the former leading the colt by the side of the horse. The colt will be disposed to keep company with the horse, and will soon learn that you wish him to go forward. Let the speed of the horse be increased a little, occasionally, and the colt will soon learn to increase his also, as he will be unwilling to be left alone, and will be inclined to follow the horse home.

I have in this manner succeeded extremely well with a colt of three years, which at first could not be rode past bars, gates, or barns where he was acquainted.

By injudicious treatment, and requiring colts to perform that they have never learned, the lives of riders are often in jeopardy; and by maltreatment, they contract bad habits, which it is much easier to avoid than to correct after they have contracted them.

I am, Sir, yours respectfully,

ALLEN T. LACY.

["A merciful man is merciful to his beast." Mr. Lacy's method seems perfectly in accordance with the laws of humanity. How often do we see the most brutal punishments inflicted on these noble animals for not performing that which they have never been taught; such practices are as far from reason as it would be to punish a child for not spelling who had never been taught the alphabet.]—*Ed. Gen. Fur.*

Art. XIV.—*Morus Multicaulis, (New Chinese Mulberry.)*

[FROM THE AMERICAN FARMER.]

This variety of Mulberry continues to attract the attention of foreign silk cultivators, and must soon exclude all other varieties from use. As we are gradually becoming a silk producing people, it is of the utmost importance that our mulberry orchards should be *commenced* with the best varieties, because it will cost no more to plant an orchard with the best, than it will to set out the very worst. But it is quite another thing, after all the expense of money and time has been incurred in planting the white mulberry, to be obliged to dig them all up and replace them with the one which shall then be found indispensable to profit. That this will be the case with all who are now planting any of the old varieties, we have no doubt; for the *Morus Multicaulis* is so much better adapted to the feeding of silkworms, and those who possess it will be able to make silk so much cheaper than those who use any other kind, that they will be able to monopolize the market—or at least to compel those who use the latter to sell silk at a loss and thereby compel them to adopt the new kind or quit the business. Our readers may be assured of the sincerity of these remarks, and we entreat them not only for their own sakes, but for the sake of the cause of American silk culture itself, to give them due attention. Europe, with its cheap labour and the assistance of this new variety of mulberry, will be able to undersell us, and thereby contend successfully with our more favoured climate and more intelligent and skilful people. To enable us therefore, to meet her in the market upon, at least, equal terms, we must avail of all the means in our power; and at this time the *Morus Multicaulis* is the most important, and should not be neglected. In the end, it is the cheapest variety for an orchard, because its extreme facility of propagation renders it capable of being multiplied ten-fold at least every year. Its rapid growth is another high recommendation. The writer of this has gathered ripe fruit from a tree only *thirteen months old*, and has at this time a tree growing from seed ripened at that time. Any person may make an orchard as large as he can desire in three years, by planting 20 or 30 trees, and laying them or planting cuttings from them. The leaves contain a much larger quantity of nutritive matter than those of the white, or any other variety, and consequently one pound of them will produce a much larger quantity of silk. The leaves are also so large that one-half, at least, of the expense of gathering is saved—one leaf of *Morus Multicaulis*, being equal to at least a dozen of the white variety. We have thought it our duty to

call public attention to this subject once more, as it is all important in all new beginnings, with individuals or nations, to take such a start as not to be obliged to turn back and begin again.

Art. XV.—*Cotton Seed Oil.*

[FROM THE SOUTHERN BANNER.]

I am aware of the difficulty in describing any new kind of machinery, so that the construction will be properly understood. I will endeavour, however, to describe my machine in as plain and perspicuous a manner as possible. In form and motion, it is like unto the cast iron cob or bark mill. The outer part is composed of six pieces of well seasoned timber, two or three inches thick, put together like staves of a tub; in the inside or concave part of which are inserted about 2500 cast steel teeth—chisel shaped, which project one-eighth of an inch and are about one-eighth of an inch wide, placed in spiral rows, about one-quarter of an inch from centre to centre of each tooth, and the rows about one-half inch apart. The staves are all fitted, dowelled and banded together perfectly true, and the rows laid off, then taken to pieces, in order to insert the teeth, which is done with what is called a set or punch, so constructed as to insert the teeth, perfectly even, and not to bruise their edges; they are driven about one inch in the wood, which makes them firm; a brad-awl is used to puncture for inserting the teeth; when this is done, the staves are put together again, and forms the tub. The inner part which revolves, is made of well seasoned quartered timber, bound firmly together with bands at each end, and then turned to the proper size, with a strong iron cylinder through the centre. The teeth are then set into it in the same manner as above, only reversing the spiral rows. The calculation must be for the edges of the teeth when put in motion, to come within one-eighth of an inch apart; by this approximation it will readily be perceived, that the seed cannot pass through without having the hull lacerated—the kernel being generally about one-eighth of an inch in diameter. The machine which I have in operation, is of the following dimensions: the tub (as I shall call it) is 14 inches in height, 12 inches diameter at the base, and tapering to 10 inches diameter at the top. The iron bands which holds the tub together have ears, through which are inserted bolts and taps, attached to a square frame which contains the machine in the centre. The hopper is of sheet iron, fitted to the top of the tub; the revolving cylinder extends six or eight inches above the tub into the hopper, with a few teeth set in spiral form, to wind the

seed into the tub, and is regulated below by a screw, with a whirl about eight or nine inches diameter, fitted in the lower part of the cylinder, constructed for a rope band. A machine of this description, if correctly made, attached to the gearing of a common gin, with the power of one horse, will hull from fifteen to twenty bushels of the rough seed per hour. The seed from this machine, with the hulls broken, or cut, are received into a revolving circular wire sieve, which separates the kernel from the hull: and to have it more perfectly clean, a fan may be also added.

The great desideratum in hulling the cotton-seed, is to construct a machine which will cut or tear the hull from the kernel. Any machine where friction or rubbing is used, will not answer the purpose well, as the kernel becomes like wax, and will choak the machine.

Practical gentlemen, or good mechanics, may apply my principle in a variety of ways: for instance, put the teeth into two pieces of thick plank, regulate them, so that their edges come within one-eighth of an inch, and put them in rapid motion, (by any construction they may think best,) and they will find the hull is cut ready to be separated from the kernel. I am of opinion that the most durable machine for hulling can be made of cast iron, of the dimension of the machine I have in use, provided the teeth can be given the same form, size, and projection; edges or ridges will not answer the purpose, as they will become smooth and in a short time will not lacerate the hull. I make these suggestions with the hope that ingenious mechanics may be able to simplify the application of my principle, as I conceive it may be done in a variety of ways.

Should any gentleman wish a model of my machine, he is quite welcome to take one from mine: or should any one at a distance order a model, I will with pleasure (at his expense) have him one made by a first rate mechanic.

Should any individual be sceptical as to the excellence of the cotton-seed oil, I have no hesitation in saying that their doubts will be removed by visiting my residence; as my dwelling house has recently been painted with that oil, and I think it the best painted house in Georgia.

It has been the opinion of some that it will not answer for white paint; in this, however, they are much mistaken. It certainly makes a whiter, and a better coat with white lead, than linseed oil; it is longer drying, consequently, the colouring principle which is in all vegetable oils, has longer time to evaporate. It requires no preparation for external painting, only a short time to settle. To prepare it well for inside painting, it will probably have to undergo the usual process for making drying oil, which is understood by all good painters. It only requires a little boiling or filtering through pulverised charcoal, and paper,

to make it an excellent lamp oil. It is well known that paint is more durable at the North than it is in the South, which I consider is owing to the circumstance of the linseed oil drying too soon in our climate: if so, I consider the cotton-seed oil peculiarly, and providentially adapted to our climate.

As yet, I have only expressed this oil for my own use, with a wooded screw, of the description which is used for packing cotton. This screw will answer well for making oil, for domestic or plantation use. The kernel must be beat or ground, and made hot as it is pressed.

I recently visited the North for the purpose of ascertaining the best mode of expressing oil, but before my object was accomplished I received accounts from home of the extreme illness of one of my family, which cut short my researches. I ascertained, however, to my satisfaction, from gentlemen engaged in oil making, the old Dutch wedge press is the best, particularly for the South; it being both simple and efficient.

Whilst in Philadelphia, I consulted the Messrs. Freemans of that city, on the subject of cotton-seed oil, they being practically acquainted with the process of expressing, and refining the various kinds of vegetable oils. They had received seed from New-Orleans, from which they had extracted the oil without hulling. I saw the article after it was clarified, and pronounce it the finest and most limpid oil I have ever seen. They are of opinion it will not only become an article of food, but when properly refined will be esteemed a luxury. They are only prevented (they state) from going into the business from the high price which they would have to pay for the seed; as it would cost in Philadelphia, including the freight 75 cents per bushel.

A planter who make 100 bales of cotton, will have about 3000 bushels of the rough seed—this when hulled will make him 1000 bushels of (in my opinion) the most valuable grain raised at the South. The cake, after the oil is expressed is much more valuable than the seed, in the usual way fed to stock. It only requires a short time for hogs, and cattle to become fond of it. The kernel before expressed, contains more oil than the stomach of the animal can digest. Hence it is, that cotton-seed is not so good for hogs, &c. as other grain; but deprive it of a large proportion of its oil, and I believe there is no grain preferable for them.

In answer to the numerous applications by letters which I have received, from New-York to New-Orleans, on this subject, I refer them to this communication. I return my thanks to those gentlemen who have so kindly offered to patronize my invention, by purchasing rights and machines. I take this occasion to state to persons at a distance, that I do not *make*, as I do not understand the machinal part of making these machines. I shall feel amply compensated, for all which I have done in this important business, by seeing patriotic and enterprising indivi-

duals successfully engaged in this enterprise, so valuable to the South.

I have engaged a competent workman to make me a press, and in a short time I hope to have it in operation; in the meantime it will afford me pleasure to impart any information in my power, on this subject.

ART. XVI.—*Management of Light Soils; by* ONTARIO.

[FROM THE GENESEE FARMER.]

In a former communication, I treated of the management of clay soils, and in this I shall confine my remarks chiefly to those of which sand and gravel are the principal component parts.

The best soils are generally of a dark colour, with a due proportion of sand, calcareous earth and clay; and it is the business of the farmer, and happily in his power, by judicious management, to preserve its fertility, or if either of those ingredients be in too large or too small a proportion, in some measure to correct the evil.

In the management of clay soils, the great object should be to render them more friable; but in the treatment of soils not sufficiently adhesive, the efforts of the farmer should be directed to rendering them more so. This is to be attained by the application of clay, marl, leached ashes or swamp mud, and by ploughing when the ground is wet.

It is often found that sandy soils rest on clay, so near the surface, that deep ploughing will bring up some of it. Where this is the case, the farmer may gain two benefits by one operation. Two inches of clay turned up and mixed with surface soil, will be equal to a dressing of manure, and every inch gained in depth, furnishes so much additional room for the roots of plants to search for food. If, however, clay is not within reach of the plough, the skilful farmer will find a substitute in the scouring of ditches or some of the substances above named. Green crops ploughed in have been found very great improvers of such soils.

In the management of light soils, I should not recommend fall or winter ploughing, unless it be with a view to destroy worms, for the operation of frost is most certainly to destroy tenacity: but I would recommend ploughing deep in all soils.

It is ascertained that a due proportion of lime in the soil is essential to the production of good wheat, and where this is lacking, the enlightened farmer will endeavour to ascertain whether the deficiency can be supplied without an expense disproportioned to the benefits. In Norfolk, England, and in Pennsylvania, lime has been found very beneficial on sandy soils. In Western New-York, where it can be obtained at a reasonable price, it would be worth while to make the experiment on a small scale.

ONTARIO.

PART III.

MISCELLANEOUS INTELLIGENCE.

Premium for Cotton Gin.—At a late meeting of the *St. Andrew's Agricultural and Police Society*, the following Resolution was unanimously adopted:

"*Resolved*, That for the best and most approved plan of preparing cotton for market, the sum of *Fifty Dollars* be offered on the following conditions, viz: that the plan be one not yet in *use*. That it be distinguished for economy of time and labour. That it in no way impair the staple of the cotton. That it be submitted on or before the first Tuesday in October next, to the Committee, which shall be appointed for the purpose of examination: that the Committee reserve to itself the right of determining whether either of the plans which may be submitted, be worthy of the premium."

J. JENKINS MIKELL,
JOHN RIVERS,
WINBORN LAWTON, } *Committee.*

Important to Milkmen.—By a variety of experiments it has been ascertained, that milk placed in vessels made of zinc increase the quantity of cream beyond what can be obtained in vessels of the ordinary kind. The quantity of butter obtained is computed at one-third more — ?—*Goodsell's Gen. Far.*

American Soft Shelled Almonds.—We have had sent to us some delightful *soft shelled* Almonds, being part of a crop of about a bushel, which was raised by Mr. Warren Mifflin, near Camden, Del. This is what we should not have expected from the clay soil of that section of the "little state"—and the complete success of Mr. Mifflin must be attributed to that care and skill in such matters as will ensure the most abundant success in other more genial districts.—*Philad. Chron.*

Cutting Timber.—In reply to the inquiry, made by D. R. respecting the proper season for cutting timber, we say, that where durability is the object, timber should be cut at that season, when there is the least sap in it, say in February, but where it is for the purpose of clearing land, and the timber to be cut is of a kind that is likely to sprout, then it is desirable to have it cut when there is most sap in it, as that not only prevents the stumps from sprouting but they rot much sooner than when cut in February.—*Goodsell's Gen. Far.*

Cutting Scions.—There is a prejudice against cutting scions, at any other time than during the month of February, which often deters people from improving opportunities which they have of procuring choice fruit, if they were apprised that scions might be cut at any time, from September until May, and succed well if they are properly kept. When scions are cut early in the season, they may be put in the garden, or some convenient place, burying one end of them in the ground, or they may be laid in a hole in the ground, covering the whole with earth, where they may be allowed to remain until spring. —*Ib.*

Arrangement of Trees in Fruit Gardens.—We would remind our readers who may engage in planting fruit gardens, that such fruits as are liable to be punctured by the Curculio, ought to stand near together, on one side or in a corner of the enclosure. This arrangement would allow the hogs to be confined by a slight or temporary fence amongst these trees in the early part of the season when that insect performs its work of ruin. In a garden of considerable extent, which includes cherries, pears, peaches, and quinces, as well as the plum, nectarine, and apricot, such an arrangement is of great consequence.

—

Sir Astley Cooper's Chilblain Ointment.—Take one ounce of camphorated spirits of wine; half an ounce of the liquor of subacetate of lead. Mix and apply in the usual way, three or four times a day. It is very efficacious.

—

Cure for Oxen strained by over-drawing —About half a pint of common soap, stirred up with a quart of milk, poured down the throat of the creature will, we are told, speedily effect a cure.—*N. E. Far.*

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An Excellent cure for a Sprain.—Take two pieces of red flannel, soak one of them with beef or pork pickle, (beef is best,) and place it on the wrist or ancle sprained, wrap the other piece over it, and the pain will subside in a very short time—*Amer. Far.*

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Capers.—The pickle in common use under the name of capers, is made of the young flower buds of a beautiful shrub found in the Levant and the south of Europe, where it grows wild among rocks and rubbish, and is as common as the bramble is with us.

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Skippers in Bacon.—Mr. Editor—There is a very great disposition in mankind, and in womankind too, to do things in any other way than the most direct. With many, a simple method of accomplishing an object has no charms; something of mummery and mystification is absolutely necessary to recommend a scheme to their favourable notice

We see often in newspapers, and every year in almanacs, sage recipes for blockading smoke houses against the inroads of those destructive little animals called skippers; and how much red pepper, trash tobacco, pennyroyal, &c. have been vainly wasted for this purpose in Virginia, nobody can calculate.

For the benefit of your readers, I give you my method of prevention. It has two recommendations—simplicity and efficiency.

Smoke the meat every day, until it is smoked enough; and on the very day that the smoking is discontinued, pack it in hogsheads, barrels, or boxes; they need not be air-tight, but it is necessary to have no holes or cracks in them large enough to admit the small fly, that is the mother of skippers. A lady to whom I communicated this plan in conversation, for the sake of convenience, used bags to keep her bacon in. Skippers were found in but one of them; and in that there was a hole.

This system has succeeded perfectly with me for several years. So far as I know it is original; but I cannot suppose that any thing so simple and so reasonable was never tried by others. D.—*Farmer's Reg.*

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Treatment of Domestic Animals.—Keep up such a sort of social and friendly intercourse with the tenants of your stable, barn-yards, and even your pig-stye that they may be as tame as kittens, and prick up their ears and wag their tails with joy and gratitude whenever you approach them. Animals will not thrive even on custard and apple pie if they must eat their allowance with fear and trembling, expecting every moment to be anhilated by their cross keeper: who, we are sorry to say, is sometimes more of a brute than any quadruped

under his care. Besides, if any of your stock should be sick, or lame, and need doctoring, you can better handle, and give them their prescriptions, if they are accustomed to kind and familiar treatment, than if harshness and bad usage had rendered them as wild as patridges, and cross as catamounts.

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How to Catch Crows.—Wilson, in his American Ornithology, says that crows have been employed to catch crows, by the following stratagem: a live crow is pinned by the wings down to the ground on his back, by means of two sharped forked sticks. Thus situated, his cries are loud and incessant, particularly if any other crows are in view. These, sweeping down about him, are instantly grappled and held fast by the prostrate prisoner, with the same instinctive impulse that urges a drowning man to grasp at every straw within his reach. The game being disengaged from his clutches, the trap is again ready for another experiment; and by pinning down each captive successively, as soon as taken, in a short time you will probably have a large flock screaming about you, in concert with the outrageous prisoners below.—This method of catching crows, is, I believe, practised in some parts of England to catch jays, who make a most violent outcry when pinned to the ground.—*Jesse's Gleanings in Nat. Hist.*

We are not informed how the first crow is taken—probably by putting salt on his tail.

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Manures.—We have uniformly recommended, that dung should be ploughed in, and not applied as a top dressing to the surface. This has been said in regard to long or unfermented dung, in which state we have considered it far more beneficial for the farmer to apply it. And the reasons are these. The gasses which are involved by fermentation, and which constitute a food for plants, are specifically lighter than the atmosphere, and consequently escape, and are lost, if the fermentation takes place *upon* the surface; but are arrested by the soil, and fed to the crop, if the fermentation takes place *under* the soil. Besides if the heat generated by the process, warms the recumbent soil, and renders it more pervious to heat and moisture. But these reasons do not apply to manure upon which fermentation has exhausted its powers This has lost its gases, and its fertilizing properties consist of ponderous substances, which have a tendency to settle, and which the rains carry into the soil. To bury these below the range of the roots, would afford very little benefit to the crop. Rotted dung, therefore, may be beneficially applied to the surface, like lime, or *concentrated manure*, and slightly buried with the harrow. Upon winter crops, and a clay soil, rotted dung, superficially buried, serves often to protect grain from the severity of the weather, and give it a vigorous start in spring. Nor is there any sensible loss, when dung has rotted in the yard, in applying it as a top dressing to grass grounds, particularly in autumn.

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Preserving Butter.—The farmers in the parish of Udney, in the county of Aberdeen, practice the following method of curing their butter, which gives it a great superiority above that of their neighbours:

Take two parts of the best common salt, one part of sugar, and one part of saltpetre; head them up together, and blend the whole completely; take one ounce of this composition for sixteen ounces of butter, work it well into the mass, and close it up for use.

The butter cured with this mixture appears of a rich marrowy consistence, and fine colour, and never acquires a brittle hardness, nor tastes salt; Dr. Anderson says, "I have ate butter cured with the above composition, that has been kept three years, and it was as sweet as at the first." But it must be noted, that butter thus cured, requires to stand three weeks or a month, before it is begun to be used: if it be sooner opened, the salts are not sufficiently blended with it; and sometimes the coolness of the nitre will then be perceived; which totally disappears afterwards."

The above is worthy the attention of every dairy woman.